ABSTRACT

OF

The Proceedings of the Thirty-Sixth Annual Meeting of the Association of Life Insurance Medical Directors of America

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An Abstract of the Proceedings

OF THE

Association of Life Insurance Medical Directors of America

THIRTY-SIXTH ANNUAL MEETING

The Thirty-sixth Annual Meeting of the Association of Life Insurance Medical Directors of America was held at Hotel Astor, New York City, on October 22nd and 23rd, 1925. The Association was the guest of the Home Life Insurance Company of New York. President C. F. S. Whitney was in the chair.

The following members and delegates were present at some time during the sessions: Frederick R. Abbe, Edwin H. Allen, John W. Amesse, Thomas D. Archibald, Henry A. Baker, G. Holbrook Barber, William B. Bartlett, John T. J. Battle, Wesley W. Beckett, Charles D. Bennett, Edward B. Bigelow, William M. Bradshaw, Chester T. Brown, William H. Browne, Frank W. Chapin, Charles L. Christiernin, Charles P. Clark, Henry Colt, Edwin A. Colton, Henry W. Cook, Robert M. Daley, Edwin Grafing Dewis, William W. Dinsmore, Percy G. Drake, Edwin W. Dwight, O. M. Eakins, Calvin H. English, William G. Exton, Paul Fitzgerald, Samuel W. Gadd, Frank Irving Ganot, Angus Graham, LeRoy C. Grau, Arthur H. Griswold, Frank L. Grosvenor, William F. Hamilton, Whitfield Harral, Ernest M. Henderson, Angier B. Hobbs, Ross Huston, Lefferts Hutton,

Charles B. Irwin, Walter A. Jaquith, Benjamin Y. Jaudon, Frank L. B. Jenney, Albert O. Jimenis, Albert E. Johann, George E. Kanouse, Robert J. Kissock, Augustus S. Knight, William P. Lamb, John M. Livingston, Robert L. Lounsberry, Lewis F. MacKenzie, Charleton B. McCulloch, Henry A. Martelle, Oscar F. Maxon, John C. Medd, William F. Milroy, James T. Montgomery, William Muhlberg, Herbert Old, Martin I. Olsen, George W. Parker, J. Allen Patton, Charles B. Piper, Joseph E. Pollard, Frank P. Righter, Thomas H. Rockwell, Oscar H. Rogers, Edward K. Root, Robert L. Rowley, Eugene F. Russell, H. Crawford Scadding, Samuel B. Scholz, Jr., Morton Snow, Howard B. Speer, Henry F. Starr, John B. Steele, Lawrence C. Sykes, William Thorndike, Walter E. Thornton, Harry Toulmin, Frank L. Truitt, Charles A. Van Dervoort, George A. Van Wagenen, Charles E. Waits, William R. Ward, William E. H. Wehner, Faneuil S. Weisse, Fred L. Wells, Chester F. S. Whitney, Thomas H. Willard, Gordon Wilson, Mr. Arthur Hunter, Wilton F. Blackford, Donald B. Cragin, Ernest J. Dewees, Harold W. Dingman, Harold M. Frost, Henry W. Gibbons, Robert J. Graves, Frank Harnden, C. E. Schilling, Samuel C. Stanton, Charles M. Whicher, Charles F. Rudasill, E. W. Rheinheimer, J. W. Wear, J. L. Siner, Carl Stutsman, A. E. Awde, M. B. Bender.

On motion the roll call was waived and the members were requested to register their names in the book provided for that purpose.

On motion the reading of the minutes of the thirty-fifth annual meeting of the Association, held on October 23rd and 24th, 1924, was waived.

The names of the following candidates recommended by the Executive Council for membership in the Association were presented:

Dr. E. E. Wishard, Medical Director, Public Savings Life Ins. Co., Indianapolis, Ind.

Dr. Frederick W. McSorley, Assistant Medical Director, Equitable Life Assurance Society, New York City.

Dr. Carl Stutsman, Medical Director, Merchants Life Insurance Co., Des Moines, Iowa.

Dr. Alfred A. Willander, Medical Director, The Mutual Trust Life Ins. Co., Chicago, Ill.

Dr. George Atcheson, Assistant Medical Director, Capitol Life Insurance Company, Denver, Colo.

Dr. Joseph L. Siner, Assistant Medical Director, Fidelity Mutual Life Ins. Co., Philadelphia, Pa.

Dr. John K. Gordon, Assistant Medical Officer, Sun Life Assurance Co. of Canada, Montreal, Can.

Dr. Albert E. Awde, Medical Director, Union Mutual Life Ins. Co., Portland, Maine.

Dr. Charles L. Rudasell, Assistant Medical Director, Life Insurance Company of Virginia, Richmond, Va.

Dr. Maurice B. Bender, Assistant Medical Director, Guardian Life Insurance Company, New York City.

Dr. A. J. Robinson, Assistant Medical Director, Connecticut General Life Ins. Co., Hartford, Conn.

Dr. S. J. Straight, Associate Medical Director, Canada Life Assurance Company, Toronto, Ont., Canada.

Dr. J. A. Roberts, Associate Medical Director, Canada Life Assurance Company, Toronto, Ont., Canada.

On motion, duly seconded and carried, the Secretary was instructed to cast a ballot in favor of the election of each of these candidates.

The Secretary announced the ballot so cast, and the candidates were declared elected to membership in the Association. The President appointed Dr. Toulmin and Dr. Willard a Committee to introduce the newly elected members to the Association.

The Secretary announced that the following named gentlemen were delegates from the Associate Companies:

Dr. M. M. Lairy, La Fayette Life Ins. Co., La Fayette, Ind.

Dr. E. W. Rheinheimer, Two Republics Life Ins. Co., El Paso, Texas.

Dr. J. H. Dunkely, Shenandoah Life Ins. Co., Roanoke, Va.

Dr. James B. Eagleson, Northern Life Ins. Co., Seattle, Wash.

Dr. J. W. Wear, National Fidelity Life Ins. Co., Kansas City, Mo.

Dr. H. H. Young, George Washington Life Ins. Co., Charleston, W. Va.

The Secretary read the minutes of the meeting of the Executive Council on May 20, 1925, and October 21, 1925. On motion these minutes were adopted as read.

Dr. Whitney—Gentlemen, I would like to present to this fine body of men the President of the Home Life Insurance Company, Mr. Low. (Applause.)

Mr. Low—Mr. President and Gentlemen: Sometime ago, Dr. Whitney came to me and said: "I have been elected President of the finest body of men in the United States, and so forth and so on, and that means that you will be the host at the convention next fall." I said: "Fine; but what does that mean?" He said: "That means that you will have to make an address of welcome at the convention assembled." I did my best to get him to resign, but he wouldn't.

I have never made an address in my life, and I am not going to start now, but that doesn't make the welcome any less heartfelt. It is a pleasure and an honor to be the host, through Dr. Whitney, of this convention, and I thank you gentlemen for the honor that you have conferred to the Home Life through Dr. Whitney and also for confirming the opinion that I had already formed of Dr. Whitney in the two years that I have been intimately associated with him.

Far be it from me to unduly praise our own force, but I think we should be congratulated in having two men at the head of our Medical Department such as Dr. Chapin and Dr. Whitney. (Applause.) I heard that one of our Agents described Dr. Chapin as that little round Santa Clause who is going to live forever and has nerve enough to sit at his desk and decline overweights. (Laughter.) I have also been told that all the cases that Dr. Whitney declines any other gentleman here would take, not only as standard, but would give them special ratings on account of their magnificent physiques and prospect of future life (laughter), but talking around a little bit, I have learned that some other executives have perhaps had the same remark made to them about you gentlemen.

I am very unfortunate in not having had the advantage of attending the eighteen previous conventions of this body, because I should like to have had the opportunity to watch the growth of this organization. I am only able to judge what that growth must have been from the finished product. From the co-operation that I have seen with respect to our own Medical Directors, with the advantages that have accrued to us from the information which the other companies have been so willing to put at the disposal of their sister companies, this body, it seems to me, has been the greatest force for cohesion among the companies. You have been unselfish with your discoveries and have always been willing to aid another company in making the proper selection.

This convention reminds me, however, of the man who sat upon the limb of a tree and assiduously sawed himself off, because I understand that you are going to take up the question of non-medical. Of course the executives will be very glad to have it all non-medical so as to save that expense and add it to the dividend, but I personally would hate to lose our Medical Director. Seriously, on that point, it seems

to me that the Medical Directors, especially those who represent mutual companies, should bear this in mind, that the companies belong to the policyholders. The present tendency is to expand as rapidly as possible, to add each month to the insurance in force, each month striving to better the corresponding month of the year before. I admit it is very pleasant and I have had the pleasure a number of months this year of seeing large increases of business paid for over last year. As one of the mutual companies, it does not seem to me that that is the end. The company belongs to the policyholders. The question to be decided is: Is the policy that you are taking up one which will benefit the policyholders that you have? It is more important that their interests should be served than that other sheep should be gathered into the fold. The Home Life has not yet decided to sanction non-medical. You gentlemen are largely responsible for that because you seem to be too busy to give me all the facts that I want, but it seems to me non-medical has a very important place in the insurance of the future. In those places where it is hard to obtain a good medical examination, it is, of course, essential; in issuing additional insurance on present policyholders it has a place. How much further it has a place I will not venture to say. I think you have to decide whether in broadening the scope you are doing it to serve your policyholders or to increase your volume. That is simply a layman's statement who has not yet thoroughly digested the subject, but it is a good point, I think, that is well worth considering in your deliberations.

Remember that the Home Life is your host, and if Dr. Whitney does not give you what you want, please let me know and I will do my best to see that you get it. (Applause.)

Dr. Whitney—Gentlemen, during the past year, the following members of our Association have died:

Dr. George C. Hall, of the Life Insurance Company of Virginia, Richmond, Va.

Dr. Edwin M. Northcott, of the Union Mutual Life Ins. Company, Portland, Maine.

Dr. William A. Peterson, of the Mutual Trust Life Ins. Company, Chicago, Ill.

Dr. William Evelyn Porter, of the Mutual Life Insurance Company of New York.

Dr. Albert T. Post, of the Equitable Life Assurance Society of New York City.

Dr. George S. Stebbins, of the Massachusetts Mutual Life Insurance Company, of Springfield, Mass.

Dr. George S. Strathy, of the Canada Life Assurance Company, of Toronto, Ont., Canada.

Dr. William Perry Watson, of The Prudential Life Insurance Company, of Newark, N. J.

Memorials have been prepared on all of these departed members and will now be presented to the Association.

DR. GEORGE CLIFTON HALL.

1867-1925.

(Presented by Dr. F. P. Righter.)

Dr. George Clifton Hall, Medical Director of the Life Insurance Company of Virginia, Richmond, Va., died suddenly at his home, Westhampton, Henrico County, on Monday, October 12th, 1925. His death came as a very distinct shock to his associates as he had always been in excellent health.

Dr. Hall was born in Lowell, Mass., December 2nd, 1867. He was graduated from the Harvard Medical School in 1890, and further pursued his medical studies in Vienna for about two years. He then engaged in general practice in Chelsea, Mass., and in New York City.

Dr. Hall became connected with the New York Life Insurance Company as an examiner and later was appointed to the

medical staff. He was appointed Medical Director of the North American Life Insurance Company at the time of its organization. He entered the service of the Life Insurance Company of Virginia on September 25th, 1912, as Assistant Medical Director. On February 1st, 1914, he was appointed Medical Director, succeeding Dr. H. Cabell Tabb, who was appointed Medical Director Emeritus.

Dr. Hall's sunny disposition and his many lovable traits endeared him to all with whom he came in contact. His Board of Directors testify to his efficiency as an officer, and the performance by him with signal ability of all duties imposed upon him. He was always courteous, considerate, capable and of real value to the organization with which he was connected.

DR. EDWIN M. NORTHCOTT.

1848-1924.

(Presented by Dr. A. E. Awde.)

It is my sorrowful duty to announce the death of my long-time friend and official predecessor, Dr. Edwin M. Northcott, which occurred at his home in Portland, Maine, on November 30th, 1924, in the seventy-sixth year of his age, after a brief illness, from pneumonia.

Dr. Northcott was born in Xenia, Ohio, in 1848. His early boyhood was spent in Central Illinois, and he was educated in the Chicago schools. After graduating from Rush Medical College, he practiced in Central Illinois and in Chicago, for a part of the time specializing in diseases of the eye and ear. In 1895 he came to Portland, Maine, as assistant to Dr. Thomas A. Foster, then Medical Director of the Union Mutual Life Insurance Company. Upon Dr. Foster's death in November, 1896, Dr. Northcott was appointed Medical Di-

rector, his official service with that company covering a period of twenty-eight years.

He was a member of this Association for practically all of the time that he held his official position with the Union Mutual, and while an infrequent attendant at the meetings of the Association, he was a thorough believer in the organization and placed high value upon the work it is doing and the friendly good will that it extends.

Dr. Northcott was most loyal and thorough in his Home Office service, having the confidence and friendship of two administrations of the Company, by all of whom he was regarded as especially well adapted to the duties that he performed with exceeding regularity during the long period that he was in an official capacity.

Dr. Northcott's widow has continued her residence in Portland. He was also survived by a daughter, who is married, and by two sisters, living in Maryland, and by a brother, living in Virginia.

DR. WILLIAM A. PETERSON.

1865-1925.

(Presented by Dr. A. A. Willander.)

Dr. William A. Peterson passed away June 28th, 1925, at the Presbyterian Hospital, Chicago, Ill., after several weeks of treatment at that institution.

Dr. Peterson was born in Sweden on February 23, 1867, and was brought to America the following Spring by his parents, who settled in Lost Grove, Iowa, where he attended the public schools until thirteen years of age, when he entered High School. In the Spring of 1884 he entered the Iowa State College, from which he was graduated in 1887 with a degree of Bachelor of Science. For a period of five years

he was Principal of Schools at Stanton and Lindsborg, Iowa, after which he attended Bethany and Augustana Colleges for short courses. He was graduated from the College of Physicians and Surgeons of the University of Illinois in 1896, with the degree of Doctor of Medicine.

A very able Medical Director, having served the Mutual Trust Life in that capacity since its organization twenty years ago, he was highly regarded by his associates and members of the field force; in fact, few Medical Directors commanded as much respect and mustered more friends among the members of their respective field organizations. Dr. Peterson was also a member of the Board of Directors of the Mutual Trust.

DR. WILLIAM EVELYN PORTER.

1866-1925.

(Presented by Dr. F. S. Weisse.)

Dr. William Evelyn Porter, Medical Director of the Mutual Life Insurance Company of New York, died at his residence, 41 West 73rd Street, New York City, on March 26th, 1925, of pneumonia, after a very short illness.

Dr. Porter was born in Hartford, Conn., on June 16th, 1866, the son of Dr. William Porter. He married Mary Rossiter Redfield at Hartford, Conn., on July 8th, 1885, and is survived by her and by two sons, William Redfield and Edward Evelyn Porter.

Dr. Porter studied abroad and entered Harvard University in 1884. Before finishing his course he entered the College of Physicians and Surgeons, New York City, graduating in 1888, after which he served as interne in Bellevue Hospital. He practiced gynecology and general medicine for a number

of years and served as attending gynecologist at the Northern Dispensary, St. Vincent's Hospital and General Memorial Hospital, as attending surgeon to DeMilt Dispensary and as consulting gynecologist to the Manhattan State Hospital. He also lectured on gynecology at the New York Polyclinic for fourteen years. He was a Resident Fellow of the New York Academy of Medicine; member of the American Medical Association; New York State Medical Society; New York County Medical Society; Society of the Alumni of Bellevue Hospital; Physicians' Mutual Aid Association and the Association of the Life Insurance Medical Directors of America, which he served as an officer for nine years and as President during 1914-15.

Dr. Porter first became connected with The Mutual Life Insurance Company shortly after his graduation from the Medical School, beginning as an Examiner in 1890. In 1898 he came to the Home Office as Home Office Examiner, becoming Assistant Medical Director in 1904 and full Medical Director in 1907.

Dr. Porter was a member of the Union Club of New York; the Harvard Club of New York; the Bankers' Club of America; the New York Athletic Club and the Columbia Yacht Club, which he served as Commodore for several years. Dr. Porter was an enthusiastic yachtsman and swimmer and was never happier than when on or in the water, except when he was extending his hospitality to his friends, either on his boat or at his house.

Dr. Porter was very closely connected with this Association not only from its scientific and administrative side, as he was a frequent speaker on many of the papers presented and as an officer and member of important committees for many years, but from its social side as well, being the recognized chairman of the Dinner Committee and always interested in any entertainment.

DR. ALBERT TODD POST.

1872-1925.

(Presented by Dr. R. M. Daley.)

Dr. Albert Todd Post, Assistant Medical Director of The Equitable Life Assurance Society of the United States, was born January 1, 1872, in Montrose, Pa. He came of sterling American stock, and inherited those qualities. His medical education was obtained at the Jefferson Medical College, graduating in 1896. He began, as a general practitioner, in his home town.

At one time Dr. Post was a member of the Pennsylvania National Guard.

Dr. Post served The Equitable first as a Medical Referee in Buffalo, N. Y., then as its Medical Director in Japan, moving from there to the Medical Directorship of the Society's business in England, France, Holland and Spain, returning to the Home Office shortly after the beginning of the World War.

Dr. Post's knowledge of the relation of medical science to life insurance, his keen judgment of persons and his native dry humor, were of inestimable value to the Medical Department, not only in determining the value of complicated risks, but also in that difficult matter of satisfying those concerned that the best interests of all had been properly considered. He held the affection and esteem of his associates, the office force and agency representatives. His home relations were those of an unselfish and loving husband and father.

Dr. Post was always deeply interested in the proceedings of this society, and regretful that he could not take as active a part as he would have liked.

Resolved, that in the death of Dr. Albert Todd Post this society has lost a member who upheld the best traditions of

medical ethics, and also be it resolved that this obituary be spread on the minutes of this society and a copy sent to his widow, Mrs. Edith Mulford Post, as a mark of its condolence.

GEORGE S. STEBBINS, M. D.

1838-1924.

(Presented by Dr. Morton Snow.)

Dr. George S. Stebbins died November 24th, 1924, in his eighty-sixth year.

Upon his graduation from Bowdoin College at the beginning of the Civil War, he enlisted in the 46th Massachusetts Volunteers. He was immediately detailed to the Medical Department with the rank of First Lieutenant Surgeon and served during the entire war; first in field service and later in the Military Hospital, Readville, Massachusetts, and Lincoln Hospital, Washington.

He began his work as insurance examiner in 1872, was appointed Assistant Medical Director of the Massachusetts Mutual in 1887, and in 1911, Medical Director.

He was elected to membership in this Association at the second annual meeting in 1891. At the sixth meeting in 1895, he read a paper, "Practical Suggestions Concerning Life Insurance," a plea for consistency which may be read today with interest and profit.

Throughout the half century of his residence in Springfield he occupied a conspicuous place in the professional, social and civic life of that city. An amateur of the liberal arts, he enjoyed a keen appreciation of the best in literature, drama and art.

Although for some years he was relieved of the more arduous duties of the office, his sense of obligation was such that

he seldom missed a day from his work and was at his desk regularly until two days before his death.

Though frail of body, he possessed a keen mind, shrewdness of judgment, and determination in character, and these qualities with his sense of humor and kindly wit maintained to the last, earned for him the respect and affection of his associates.

GEORGE STEWART STRATHY, M. D. C. M.

1883-1925.

(Presented by Dr. H. S. Hutchinson.)

Dr. George S. Strathy, Assistant Medical Director of the Canada Life Assurance Company since 1913, died in Toronto on June 11th, 1925, of purulent pericarditis.

A graduate of Toronto University, Dr. Strathy spent a year in the Hospital for Sick Children, then went to London for a year, and then spent a period at the Manhattan Maternity. On his return he entered private practice in Toronto and began his hospital and teaching career, which he pursued indefatigably until the outbreak of war. In 1913 he was appointed Assistant Medical Director of the Canada Life. He volunteered at the very first for overseas service, and reached France in September, 1915. During the first part of his service he was variously attached to base hospitals and Casualty Clearing Stations and was a very forceful figure in organizing and in adopting new measures, and in stimulating medical conferences. He never rested, however, until he got to the trenches as regimental medical officer, and it has been learned from associates during this period that his bravery and endurance were remarkable to a degree. He was invalided to England with trench fever in 1918, and on convalescence was given charge of the medical service in the large Ontario Government hospital at Orpington, with the rank of Lieuten-

ant Colonel. He made a wonderful service of this.

On his return to Toronto, he was given charge of the Outpatient Department of the Toronto General Hospital with the University appointment of Associate in Medicine. He made this a very successful and important part of the Medical Educational System of this part of Ontario, and was idolized by those associated with him.

As a part time man at the Canada Life his very wide clinical experience of all sorts made him an extremely valuable adviser. This was most felt in his liberality of selection. At the Association of Life Insurance Medical Directors, he read a paper on "War Disabilities in Relation to Insurance," and discussed glycosuria. He contributed the chapter on "Army Service in Relation to Insurance," in Foxworthy's recent manual.

Dr. Strathy had charm, character, and great industry, and the tribute which the City of Toronto paid in his last illness to this man of only forty-one years of age was remarkable to a degree.

WILLIAM PERRY WATSON, M. D.

1854-1925.

(Presented by Dr. J. Allen Patton.)

This Association has lost during the past year one of its oldest members in the death of Doctor William Perry Watson, Consulting Medical Director of The Prudential Insurance Company, who died on July 17, 1925, as the result of an automobile accident.

He was elected a Member of this Association at its Tenth Annual Meeting on May 31, 1899, and was a member of the M. I. B. Committee in 1919.

He was born on May 17, 1854, at Bolton on Lake George, Warren County, New York; was graduated from Rutgers

College in 1875 and received his degree of M. D. from the College of Physicians and Surgeons, Columbia University, New York City, in 1878.

He began his practice by becoming associated with his uncle, Doctor Beriah A. Watson, who was one of the prominent physicians in Jersey City, New Jersey. He also served as city physician during 1879-1880. During his years of private practice he was visiting physician to Christ Hospital, City Hospital of Jersey City, and St. Francis Hospital, and consulting physician to St. Michael's Orphan Asylum and the City Hospital of Bayonne. The internes who served under him remember him for his consideration of them, his helpfulness in their early days of the practice of medicine, and the way in which he taught them so many things in diagnosis and treatment as they were known in those days when the X-ray and radium were unknown, when bacteriology and pathology were in their infancy, and when laboratory aids were confined largely to analysis of the urine. He was greatly interested in pediatrics and was a lecturer on this subject in the New York Polyclinic from 1885 to 1888, was one of the organizers of the American Pediatric Society in 1889 and its Recorder until 1893, and in 1891 was Chairman of the Section on Diseases of Children of the American Medical Association. He was the founder of the "Archives of Pediatrics" and its owner for many years. This journal he founded in 1884, the first of its kind printed in the English language, and which to this day is published in practically its original make-up. Many of his writings were along these lines and show the result of deep thought and study. When in 1885 he became a member of the Home Office force of The Prudential he devoted only one day a week to this work; but in 1899 he was made an Assistant Medical Director, an Associate Medical Director in 1910, and Consulting Medical Director in 1913. He saw and took part in the many changes and advances in the treatment of applications for insurance, was keenly interested in the better-

ment of the medical service, ever ready to instruct those who needed it and was likewise ready to take to task those examiners who were not doing their work in the manner in which they should.

One of the great interests of his later years was the State Board of Medical Examiners of New Jersey, of which he was a member from 1890 until the date of his death.

Those of us who were associated with him and knew his many sterling qualities and his kindly spirit, feel his loss and miss him more than we can say. He was a Christian gentleman, a firm believer in the Church and all it stands for, a doer of good and one who could say as Bryant does in his Thanatopsis:

"So live that when thy summons comes to join
The innumerable caravan which moves
To that mysterious realm, where each shall take
His chamber in the silent halls of death,
Thou go not, like the quarry slave at night
Scourged to his dungeon, but sustained and soothed,
By an unfaltering trust, approach thy grave
Like one who wraps the drapery of his couch
About him and lies down to pleasant dreams."

Dr. Chester F. S. Whitney, President of the Association, devoted an Address* to a discussion and solution of certain critical conditions that had developed during the past year.

The Nominating Committee presented the following report:

"At a meeting held October 21st, 1925, the Committee, by votes duly seconded and carried, has decided to recommend the nominations of the following:

For President—Dr. Angier B. Hobbs.
For First Vice President—Dr. Wesley W. Beckett.
For Second Vice President—Dr. Robert M. Daley.
For Secretary—Dr. Chester T. Brown.
For Treasurer—Dr. Charles L. Christiernin.
For Editor of the Proceedings—Dr. Eugene F. Russell.

*As the discussion was necessarily of a confidential nature, the President preferred that the address be not published.

For Members of the Executive Council—Dr. G. A. Van Wagenen, Dr. E. W. Dwight, Dr. William Muhlberg, Dr. Ross Huston, Dr. J. Allen Patton.

All of which is respectfully submitted.

(Signed) R. M. DALEY,
W. R. WARD,
C. F. S. WHITNEY,
HARRY TOULMIN,
C. T. BROWN,
T. H. WILLARD, Chairman."

Dr. Whitney—Are there any further nominations? If not, the Chairman will entertain a motion that the nominations be closed.

As no further nominations were presented, it was moved that the nominations be closed, and the Secretary was instructed to cast a ballot for the officers and members of the Executive Council placed in nomination by the Nominating Committee. The motion was carried.

The Treasurer, Dr. C. L. Christiernin read his report. The Auditing Committee, Dr. Jaquith and Dr. Russell, reported that the Committee had audited the Treasurer's Report and found it to be correct. On motion, duly seconded, the report of the Treasurer was accepted with thanks and placed on file.

A motion was made by the Executive Council that the balance of the fund of the Dreyer Committee on hand be returned to the Companies pro rata to their contributions. The motion was carried.

Dr. O. H. Rogers, Chairman of the Special Committee in charge of the M. I. B. presented the report of that Committee, which was accepted with thanks, and ordered placed on file.

Dr. Harry Toulmin, Chairman of the Committee to review questions on medical blanks, made the following report:

"Dr. Cook and I have not had a meeting, but we have corresponded. I haven't had a chance to talk with him since

coming to New York, but I want to express my own views. If he differs, he can state his opinion.

"I feel that the Association sat so hard on the question of a standardized blank two years ago that it is hardly necessary to continue this Committee. Some of you may remember that two of my associates prepared a short paper and read it at that meeting. There was some discussion and I think that there was hardly anybody in favor of a standardized blank. The Committee, however, was continued—I think there was an idea expressed that it might suggest to the various member companies certain improvements in the blanks as the taking out and modification of some questions and the addition of others. So if it be the opinion of this Association, Mr. President, if we can be of any use whatever to the Association as a Committee, we will be very happy to continue, but as I said before, personally I don't think we are of very much service to you."

A motion was made and seconded and carried that the Committee be discharged.

It was moved and seconded that the Telegraphic Code Committee as a Telegraphic Code Committee be discharged. Motion was carried.

The report of the Committee to make a survey of the medical examiners was referred back to the Committee for further study and consideration.

The Joint Committee on Mortality of the Medical Directors Association and Actuarial Society presented the following synopsis on the report of Goitre:

Report of the Joint Committee on Mortality Among Persons With Goitre

The Joint Committee on Mortality of the Actuarial Society of America and of the Association of Life Insurance Medical Directors has been endeavoring to obtain additional information regarding the mortality among persons with goitre. Thirty of the largest American and Canadian companies were asked to contribute their data on the subject. It was found, however, that the majority of these companies could not obtain their cases unless by reviewing all their application papers to find the policyholders with goitre. In the opinion of the committee, the amount of time and money expended on such a search would not have been justified by the results. Fortunately there were ten companies which were in a position to give the material without a great deal of labor. However the amount of the material proved to be comparatively small.

The companies were asked to furnish the cases whether treated as standard or substandard, and to indicate whether the goitre was small, medium or large. In many instances the size of the goitre had not been specified by the medical examiner. The material was divided into two groups, without regard to the size of the goitre, (a) those insured as standard risks, and (b) those insured as substandard risks. There was no material difference in the mortality of these two groups. The reason for this became apparent on analyzing the data. The company which contributed most of the material on substandard lives had been rather severe in its treatment until recent years, while another company contributing largely to the data on standard lives had been very liberal. There was practically no difference from the standpoint of mortality between the material furnished by the former company of persons with goitre, treated as substandard risks, and the latter company with approximately the same number of persons accepted as standard risks. The experi-

ence of all the companies was therefore combined and tested by the A. M. Select Table. Among the 4,714 cases supplied by the ten companies, 2,934 had been accepted as standard risks, and 1,780 as substandard. The companies did not always specify the sex, but among those which gave the sex, one-third were women—a much higher percentage than holds among the policyholders as a whole. The results of this investigation follow:

GOITRE

Policy Years	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
	Policies			Amounts Insured		
1-3	47	49.7	95%	125,800	112,200	112%
4-5	23	27.1	85	49,000	57,900	85
6 and over	33	40.2	82	75,500	79,700	95
All years	103	117.0	88%	250,300	249,800	100%
Age at Issue						
15-24	25	28.3	88%	32,500	41,600	78%
25-39	48	51.9	92	120,300	107,000	112
40-49	18	24.4	74	67,500	65,500	103
50 to end	12	12.4	97	30,000	35,700	84
All ages	103	117.0	88%	250,300	249,800	100%

Number of cases, 4,714.

In drawing deductions from the foregoing it should be remembered that the experience of the companies in recent years has been distinctly lower than the American Men Select Table. Accordingly the mortality among persons with goitre has been somewhat higher than the normal.

An analysis of the causes of death shows that in five cases the death was directly due to goitre. The deaths from pneumonia, broncho-pneumonia and tuberculosis of the lungs are somewhat high, but this may be due to accidental fluctuation.

Four of the companies did not specify the size of the goitre. The other six companies furnished the subdivisions whenever possible. There were 1,791 cases for insurance of $3,530,800 in which the goitre was said to be small. An

investigation of such cases was made but not of persons with medium or large goitres as there were too few of them.

PERSONS WITH SMALL GOITRE

	Actual Deaths	Expected Deaths	Ratio of Actual to Expected Deaths by A. M. Select Table
Policies	46	50.3	91%
Amount insured	$99,800	$101,700	98%

There was very little difference between the mortality among the cases specified as having small goitres and that of the whole group.

The attention of the companies has been drawn to the desirability of keeping a record of cases with goitre, so that another investigation may be made in a few years with much larger and better defined material.

The Committee to consider the publishing of papers not read or discussed at the meetings of the Association made no report.

The Joint M. A. Committee, the Blood Pressure Committee, and the Public Health Committee made no reports.

Dr. Whitney—We can now proceed to the scientific session, and the first paper to be read is one prepared by Dr. Weisse and Mr. W. M. Strong of the Mutual Life. I will ask Dr. Weisse to make a few remarks. His paper, I believe, is in the hands and has been in the hands of all the members.

Dr. Weisse:—Mr. President and Fellow Members: When President Whitney asked that I write a paper on Overweights at this meeting, he told me that he had had inquiries from several companies as to how the Mutual Life was getting along with their Overweights, and he wondered if I would tell the Association what our experience had been, and go somewhat into detail as to our methods of selection. This I agreed to do and I asked Mr. Wendell M. Strong, our Associate Actuary, to help me.

As a Company and as individuals, we hold no brief for

Overweights; nor do we consider them particularly desirable risks. They, however, run pretty nearly ten per cent of our business, and it was necessary to evolve some methods of selection by which we could obtain a mortality among Overweights sufficiently low for us to be able to handle such business at a standard rate. We have accepted these Overweights for the past twenty years, and we are getting a workable mortality in Build Groups 2 and 3. The mortality in Build Group 4 is impressive, but practically unimportant, as the group represents only one-third of one per cent of our business. If we, as a Company, did substandard business, many of the applicants in Build Group 3 and all in Build Group 4 would have, of course, a substandard rate. As we do not do substandard business and we have to do business with Overweights, we have selected them very closely with the results which appear in our paper.

We are endeavoring continually to make our selection closer and better in this group of cases, and our preliminary investigations covering the more recent years, lead us to think that we are succeeding. This belief, however, time alone can prove to be right or wrong. We have not given any details about these comparatively recent investigations in our paper for the reason that they are not in any way definite, but they appear, however, to give us hope that we are selecting along the right lines.

As I have said before, our paper is in no way a plea for Overweights. It is simply a report of our own experience with this group of cases during the past twenty-five years.

TWENTY YEARS OF OVERWEIGHTS SELECTION AND STATISTICS

By Dr. Faneuil S. Weisse, Medical Director,
and Wendell M. Strong, Associate Actuary,
The Mutual Life Insurance Company of New York

When President Whitney asked us to write a paper on overweights for this meeting, he asked us to say something about our methods of selection, as well as our mortality experience.

In the Mutual Life we have always laid great stress on the type of overweights selected, and since 1904, we have depended more and more, in our selection, on the type of overweight represented, taken in conjunction with the family history. We feel that as complete a family record as possible is of importance because a good family record with overweight as a family characteristic is definitely favorable; a good family record with overweight not a characteristic helps somewhat, while a poor family record is a definitely bad impairment in overweights. To quote one of our colleagues, we select "the draught horse type rather than the race horse type overlaid with adipose."

We have a questionnaire which goes to the examiner from the referee whenever the applicant is 20% or more overweight:

Exact height and weight by scales (unless given)?

Is applicant active and muscular?

Is weight a family characteristic?

Is overweight due to large bones and muscular development or is it due to excessive deposits of fat?

Is weight well distributed?

Has applicant a long body and short legs?

Is the applicant a light, moderate or excessive eater?

Is the skin normally soft and clean or is it greasy or quickly made moist on ordinary exertion?

Is the complexion clear or is it pale, waxy, muddy or florid?

Is fat a material factor in overweight?

We take into consideration the applicant's occupation, whether it is active or sedentary, what we can find out with reference to his habits with regard to exercise, and also endeavor to find out whether or not he has been gaining in weight within a few years. We feel that, provided this questionnaire is answered satisfactorily—you would be surprised at the number of cases in which we receive adverse information from the examiner—if the applicant has maintained his present weight for a number of years, and if he has a really good family history, we can do business with him on a satisfactory basis. We are very careful to exclude applicants who are "fat" men rather than "big" men, and there is a very distinct line to be drawn between these two groups of overweights.

We obtain either a commercial or an inspection report on every applicant and if anything questionable comes up in the report we go back to the examiner for further information. Overweights have averaged a little over 6% of our total net declined and postponed cases for the past five years.

In fact, these overweight cases are really a super-selected group.

We are fortunate in being able to obtain data on a group of overweight risks to whom policies were issued in the years 1900 to 1904 inclusive—at the period of our greatest volume of business prior to 1907. In this paper these figures are used for purposes of comparison with those selected after 1907. This is of interest, because, in the old days prior to 1904, many of us were still selecting overweights more or less liberally on the remnants of the old theory that we might expect as good or better mortality from overweights than from underweights. The M. A. Investigation and our subsequent experience have taught us, however, that the opposite is the actual condition.

The differences shown in mortality between the prior to 1907 and the later groups are due, in part only, to the methods of selection. We have since 1907 a very marked improvement in the general mortality of the community. We have also the effect of a vast amount of propaganda—started largely, we believe, by insurance companies—against overweights. It has been in the public press, it has been dinned into the ears of the unhappy overweight by his friends, and people have learned that they have difficulty in obtaining life insurance if they are overweight. Added to this is the general interest in diet, calories, etc., as well as education as to the necessity of a moderate amount of exercise; all of which have had their effect on the overweight or "near" overweight.

Our figures cover policies and amounts issued to men only during two periods, (a) issues of 1900 to 1904, inclusive, excluding the first ten policy years, exposed from 1910 to 1924, (b) issues of 1907 to 1922, exposed from 1907 to 1924. This study is confined to the Medico-Actuarial Build Groups 2, 3 and 4; 5 being excluded as the number of entrants and deaths was so small as to make it negligible. The expected deaths and losses are based on the Medico-Actuarial (M. A.) Select Table.

The limiting weights of these build groups at age 37, with the departures from the average weight are shown in Table A.

TABLE A

Heights	Build Group	Range of Weights	Departure from the Average Weight Pounds Overweight	Percentage Overweight
5 ft. 4 in.	2	162-175	22-35	15.7%-25.0%
5 ft. 8 in.	2	181-196	24-39	15.3%-24.8%
6 ft. 0 in.	2	207-224	29-46	16.3%-25.8%
5 ft. 4 in.	3	176-189	36-49	25.7%-35.0%
5 ft. 8 in.	3	197-211	40-54	25.5%-34.4%
6 ft. 0 in.	3	225-242	47-64	26.4%-36.0%
5 ft. 4 in.	4	190-210	50-70	35.7%-50.0%
5 ft. 8 in.	4	212-235	55-78	35.0%-49.7%
6 ft. 0 in.	4	243-268	65-90	36.5%-50.6%

The extent of business done in these build groups with the

proportion to the total is shown in Table B for the issues of 1907 to 1922.

TABLE B

Build Group	Insured Policies	Insured Amounts	Proportion Policies %	Proportion Amounts %	Policies Terminated by Death
2	66,891	$266,856,200	7.04	9.66	3,390
3	19,001	85,828,800	2.00	3.11	1,117
4	3,253	17,243,000	.34	.62	220
5	48	306,200	.01	.01	1
Total Overweights	89,193	370,234,200	9.39	13.40	4,728

A brief comparison is given in Table C showing the mortality ratios of the general experience with the corresponding ratios of the three overweight groups. These are shown for the first five policy years, and the whole period, by group ages at issue confined to the second period, 1907 to 1922. They are also shown by attained group ages for both periods—in the issues of 1907 to 1922, the first five policy years have been excluded, while in the years of 1900 to 1904, the first ten policy years have been excluded.

TABLE C

Ratio % of Actual to Expected by the M. A. Select Table

Ages at Issue	Gen. Exp. No.	Gen. Exp. Amt.	Build (2) No.	Build (2) Amt.	Build (3) No.	Build (3) Amt.	Build (4) No.	Build (4) Amt.
Issues of 1907 to 1922, Exposed to 1924 Policy Years One to Five								
15-19	81	121	86	50	73	226	—	—
20-29	81	85	97	100	123	132	211	146
30-39	75	79	85	81	96	85	131	173
40-49	69	71	78	80	92	103	64	57
50-59	69	73	75	74	93	118	34	17
60&Ov.	65	65	61	58	95	104	39	14
Total	73	76	79	77	95	106	82	71
Issues of 1907 to 1922, Exposed to 1924 Policy Years One to Seventeen								
15-19	81	108	109	68	89	170	—	—
20-29	82	85	100	103	109	138	204	119
30-39	81	88	98	106	101	96	170	218
40-49	77	82	95	98	109	124	115	82
50-59	77	79	88	86	100	112	96	112
60&Ov.	72	72	75	66	92	97	32	21
Total	79	83	92	92	103	114	122	112

Issues of 1907 to 1922, Exposed to 1924
Policy Years Six and Over by Attained Group-Ages

Attained Ages								
Under 30	88	86	120	78	83	35	—	—
30-39	83	89	97	112	84	117	137	98
40-49	87	98	113	136	112	140	233	226
50-59	87	97	116	118	126	136	171	179
60-69	86	87	98	93	104	109	119	115
70&Ov.	78	77	95	110	103	79	46	27
Total	86	92	107	113	112	125	163	154

Issues of 1900 to 1904, Exposed from 1910 to 1924
Policy Years Eleven & Over by Attained Group-Ages

Under 30	—	—	—	—	—	—	—	—
30-39	—	—	76	84	101	72	301	350
40-49	—	—	133	173	177	190	210	191
50-59	—	—	130	131	174	239	195	200
60-69	—	—	124	134	172	212	193	185
70&Ov.	—	—	107	97	111	77	137	100
Total	—	—	124	128	162	190	189	176

The ratio of the actual to expected mortality for policy years 1 to 17, issues of 1907 to 1922 exposed to 1924 is given without any allowance for the effect of the influenza epidemic, 1918-1920. Making allowance for the effects of this epidemic gives us a ratio in Build Group 2 of 85% as against 92%, in Build Group 3 of 97% as against 103% and in Build Group 4 of 111% as against 122%.

A further comparison between the two periods of exposure is given in Table D.

We think it is of interest to know the actual number of cases entering each group and the amounts of insurance involved for policy years eleven and over for both periods as given in Table D.

Number of cases entering and amount of insurance.
Policy years 11 and over.

Build	Issues of 1907-1922		Issues of 1900-1904	
group	No.	Amt.	No.	Amt.
(2)	10,758	$34,189,000	8,415	$25,289,600
(3)	3,031	10,430,000	2,870	9,237,700
(4)	565	2,952,200	764	2,833,700

TABLE D

Comparison of Actual to Expected by the M. A. Select Table
Issues of 1907 to 1922, Exposed to 1924
General Experience
Policy Years One-Ten

Ages at Issue	On Policies				On Amounts			
	Expos.	Deaths Act.	Expect.	Ratio	Exposures	Losses Actual	Expected	Ratio
15-29	2,148,364	7,826	9,582.60	81.7	$3,892,141,400	$15,330,300	$17,309,411	88.6
30-44	2,287,490	10,276	13,260.37	77.5	6,892,310,200	32,580,000	40,148,162	81.1
45&Ov.	822,024	9,616	13,057.92	73.6	3,173,953,600	37,632,500	49,375,829	76.2
Total	5,257,878	27,718	35,900.89	77.2	13,958,405,200	85,542,800	106,833,402	80.1
	Policy Years Eleven and Over							
15-29	203,433	855	1,068.73	80.0	324,216,500	1,476,700	1,708,821	86.4
30-44	224,541	1,967	2,184.48	90.0	538,950,500	6,090,100	5,429,584	112.2
45&Ov.	74,344	2,179	2,416.44	90.2	253,193,600	8,057,000	8,316,585	96.9
Total	502,318	5,001	5,669.65	88.2	1,116,360,600	15,623,800	15,454,990	101.1
	Build Group (2) Policy Years One-Ten							
15-29	50,835	226	229.94	98.3	116,492,200	502,500	524,434	95.8
30-44	192,826	1,051	1,163.64	90.3	694,553,500	3,985,100	4,209,861	94.7
45&Ov.	109,679	1,461	1,754.67	83.3	503,695,400	6,416,600	7,933,268	80.9
Total	353,340	2,738	3,148.25	87.0	1,314,741,100	10,904,200	12,667,563	86.1

Issues of 1907 to 1922 (Continued)
Policy Years Eleven and Over

Ages at Issue	On Policies: Deaths Expos.	Act.	Expect.	Ratio	On Amounts: Losses Exposures	Actual	Expected	Ratio
15-29	4,382	29	23.52	123.3	8,608,800	78,200	46,251	169.1
30-44	18,659	250	194.36	128.6	52,716,300	765,900	566,396	135.2
45&Ov.	9,893	373	315.09	118.4	40,593,100	1,761,400	1,346,266	130.8
Total	32,934	652	532.97	122.3	101,918,200	2,605,500	1,958,913	133.0
			Build Group (3) Policy Years One-Ten					
15-29	11,302	58	50.94	113.9	30,637,100	194,000	137,111	141.5
30-44	55,527	346	337.15	102.6	220,934,100	1,642,400	1,349,301	121.7
45&Ov.	34,110	531	533.37	99.6	168,339,400	2,430,400	2,553,777	95.2
Total	100,939	935	921.46	101.5	419,910,600	4,266,800	4,040,189	105.6
			Policy Years Eleven and Over					
15-29	1,037	3	5.60	53.6	2,289,800	14,000	12,323	113.6
30-44	5,532	68	57.73	117.8	17,020,600	427,700	186,620	229.2
45&Ov.	3,104	111	98.13	113.1	12,639,500	562,800	393,394	143.1
Total	9,673	182	161.46	112.7	31,949,900	1,004,500	592,337	169.6

Issues of 1907 to 1922 (Continued)
Build Group (4)
Policy Years One-Ten

Ages at Issue	On Policies				On Amounts			
	Expos.	Deaths Act.	Expect.	Ratio	Exposures	Losses Actual	Expected	Ratio
15-29	1,918	15	8.70	172.4	$ 9,073,400	$ 40,500	$ 41,282	98.1
30-44	10,585	79	65.14	121.3	47,758,500	363,400	297,662	122.1
45&Ov.	5,211	73	77.88	93.7	33,468,400	520,900	490,726	106.1
Total	17,714	167	151.72	110.1	90,300,300	924,800	829,670	111.5
	Policy Years Eleven and Over							
15-29	168	4	.90	444.4	1,081,000	14,000	5,498	254.6
30-44	1,031	29	11.19	259.2	4,494,400	101,900	53,703	189.7
45&Ov.	558	20	16.35	122.3	4,001,700	94,900	122,187	77.7
Total	1,757	53	28.44	186.4	9,577,100	210,800	181,388	116.2

Issues of 1900 to 1904 Exposed to 1924
Policy Years Eleven and Over
Build Group (2)

Ages at Issue	On Policies				On Amounts			
	Expos.	Deaths Act.	Expect.	Ratio	Exposures	Losses Actual	Expected	Ratio
15-29	12,005	87	74.77	116.4	22,497,200	192,000	140,713	136.4
30-44	48,538	839	631.49	132.9	134,572,300	2,692,900	1,839,097	146.4
45&Ov.	15,330	744	645.43	115.3	66,655,800	3,437,500	2,980,038	115.4
Total	75,873	1,670	1,351.69	123.5	223,725,300	6,322,400	4,959,848	127.5
				Build Group (3)				
15-29	3,168	33	19.71	167.4	6,336,000	68,500	39,731	172.4
30-44	16,180	379	214.43	176.7	45,059,000	1,408,900	610,289	230.9
45&Ov.	5,590	344	231.33	148.7	23,957,200	1,594,800	970,820	164.3
Total	24,938	756	465.47	162.4	75,352,200	3,072,200	1,620,840	189.5
				Build Group (4)				
15-29	555	11	3.38	325.4	1,463,000	22,000	8,872	248.0
30-44	4,171	112	57.14	196.0	14,434,400	469,500	209,073	224.6
45&Ov.	1,610	109	62.23	175.2	7,862,700	448,900	316,730	141.7
Total	6,336	232	122.75	189.0	23,760,100	940,400	534,675	175.9

In the Medico-Actuarial Investigation the fact was brought out that mortality was influenced by height. Accordingly an investigation was made of Build Groups 2, 3 and 4 from this standpoint. Each of these groups was divided into three Height Groups as follows:

Height Group (A) Short men—below 5′ 7″
(B) Medium men—from 5′ 7″ to 5′ 10″
(C) Tall men—above 5′ 10″

A summary of the results in each of the three Build Groups is given in Table E.

As some medical impairments are expected to influence the mortality of overweights an investigation was made of a number of impairments which furnished a sufficient number of deaths. It was felt that this study might be of assistance in the selection of this type of risk. We must bear in mind, however, that most of the classes are not large enough to offset accidental fluctuations and that the influenza epidemic of 1918-1920 was a disturbing factor, especially at the younger ages where its effect was most severe. The result of this study is submitted in Table F.

These results do not appear to be entirely consistent, which is probably due to accidental fluctuations or more careful selection practice in certain groups of cases. In general, after due allowance has been made for such fluctuation and selection, this table shows us that some impairments when associated with overweight materially effect mortality. Both classes 6 and 7, history of albuminuria, show increased unfavorable mortality at the older ages. Classes 17 and 18, alcohol, show increased mortality at the younger ages. Class 25, articular rheumatism, Class 42, abdominal excess, show an increased mortality. Classes 56 and 61, unfavorable family record, give the same result.

TABLE E

Issues of 1907 to 1922, Exposed to 1924
Policies Terminated by Death and the Ratio of Actual to Expected
by the M. A. Select Table
Policy Years One to Seventeen Combined

		All Ages			Ages at Issue 15-29			30-44			45 and Over		
			Ratio			Ratio			Ratio			Ratio	
Build	Height	Deaths	Pol.	Amt.	Deaths	Pol.	Amt.	Deaths	Pol.	Amt.	Deaths	Pol.	Amt.
2	Short	731	87	91	59	104	83	249	87	83	423	86	94
2	Medium	1,878	90	89	129	90	100	701	90	89	1,048	89	88
2	Tall	781	104	104	67	128	124	351	118	138	363	91	82
2	Total	3,390	92	92	255	101	102	1,301	96	100	1,834	89	88
3	Short	240	92	87	16	133	217	70	77	61	154	98	92
3	Medium	631	107	129	31	100	132	224	105	139	376	109	123
3	Tall	246	105	105	14	103	100	120	134	180	112	86	60
3	Total	1,117	103	114	61	108	139	414	105	135	642	102	102
4	Short	44	108	85	4	153	112	24	128	59	16	82	107
4	Medium	142	130	117	8	147	49	65	149	151	69	115	106
4	Tall	34	113	124	7	461	828	19	135	167	8	55	63
4	Total	220	122	112	19	198	117	108	142	132	93	99	101

TABLE F

Effect of Medical Impairments on Mortality
Issues of 1907 to 1922, Exposed to 1924
Policy Years One to Seventeen Combined
Build Group (2)

Code	Impairments	Ages at Issue	Entr.	Expos.	Deaths Act.	Deaths Expect.	Ratio No.	Ratio Amt.
	Total Build Group (2)	Total	66,891	386,274	3,390	3,681.22	92	92
		15-39	33,970	192,370	1,003	1,017.34	99	105
		40&Ov.	32,921	193,904	2,387	2,663.88	90	89
5	Sugar in urine within 5 yrs.	Total	765	4,139	48	45.21	106	120
		15-39	274	1,404	18	7.46	241	345
		40&Ov.	491	2,735	30	37.75	80	94
	more than 5 years	Total	185	870	9	8.84	102	63
		15-39	51	301	1	1.72	58	82
		40&Ov.	134	569	8	7.12	112	60
6	Albumin in urine without casts within 5 yrs.	Total	175	1,068	13	13.77	94	55
		15-39	61	326	2	1.72	116	72
		40&Ov.	114	742	11	12.05	91	53
	more than 5 years	Total	92	517	9	5.98	151	107
		15-39	27	166	1	.99	101	192
		40&Ov.	65	351	8	4.99	160	104
7	Albumin in urine without exam. for casts, within 5 yrs.	Total	620	3,457	33	32.30	102	102
		15-39	302	1,746	9	9.29	97	76
		40&Ov.	318	1,711	24	23.01	104	111
	more than 5 years	Total	181	809	15	8.74	172	140
		15-39	86	357	1	1.79	56	10
		40&Ov.	95	452	14	6.95	201	174

Build Group (2) (Continued)

Code	Impairments	Ages at Issue	Entr.	Expos.	Deaths Act.	Deaths Expect.	Ratio No.	Ratio Amt.
12	Gall stones within 5 yrs.	Total	108	586	9	6.03	149	216
		15-39	22	142	1	.83	121	34
		40&Ov.	86	444	8	5.20	154	237
	more than 5 years	Total	102	488	3	7.58	40	23
		15-39	9	48	—	.36	—	—
		40&Ov.	93	440	3	7.22	42	24
17	Occasional excesses as to alcohol	Total	1,039	4,858	46	42.91	107	110
		15-39	511	2,418	18	12.59	143	179
		40&Ov.	528	2,440	28	30.32	92	84
18	Steady free user of alcohol	Total	4,678	35,254	366	371.63	99	85
		15-39	2,205	16,264	93	90.90	102	97
		40&Ov.	2,473	18,990	273	280.73	97	83
24	Renal colic within 5 yrs.	Total	181	1,113	8	12.78	63	35
		15-39	67	400	1	2.19	46	53
		40&Ov.	114	713	7	10.59	66	32
	more than 5 years	Total	187	1,096	20	17.68	113	74
		15-39	47	232	1	1.35	74	42
		40&Ov.	140	864	19	16.33	116	76
25	Rheumatism-acute articular	Total	671	3,372	23	32.37	71	50
		15-39	276	1,342	7	6.80	103	71
		40&Ov.	395	2,030	16	25.57	63	46

Build Group (2) (Continued)

Code	Impairments	Ages at Issue	Entr.	Expos.	Deaths Act.	Deaths Expect.	Ratio No.	Ratio Amt.
42A	Abdominal girth greater than chest expanded, from 0-1 inch	Total	407	2,709	43	34.39	125	105
		15-39	124	881	5	5.06	99	95
		40&Ov.	283	1,828	38	29.33	130	107
42B	From 1 1/4-2 inches	Total	142	921	14	13.16	106	55
		15-39	31	174	1	.94	106	57
		40&Ov.	111	747	13	12.22	106	55
42C	From 2 1/4-3 inches	Total	31	207	5	3.63	138	85
		15-39	9	55	—	.37	—	—
		40&Ov.	22	152	5	3.26	153	88
42D	all over 3 inches, incl.	Total	20	110	1	1.41	71	68
		15-39	10	47	—	.23	—	—
		40&Ov.	10	63	1	1.18	85	76
56	Apoplexy or paralysis in family record	Total	274	1,475	26	18.00	144	107
		15-39	60	319	4	1.79	224	113
		40&Ov.	214	1,156	22	16.21	136	106
61	Heart disease in family record	Total	272	1,522	17	19.25	88	113
		15-39	64	419	4	2.41	166	218
		40&Ov.	208	1,103	13	16.84	77	106

Build Group (3)

Code	Impairments	Ages at Issue	Entr.	Expos.	Deaths Act.	Deaths Expect.	Ratio No.	Ratio Amt.
	Total Build Group (3)	Total	19,001	110,612	1,117	1,082.92	103	114
		15-39	9,053	51,412	281	275.53	102	103
		40&Ov.	9,948	59,200	836	807.39	104	116
5	Sugar in urine within 5 yrs.	Total	234	1,215	9	11.38	79	150
		15-39	84	421	1	2.17	46	54
		40&Ov.	150	794	8	9.21	87	163
	more than 5 years	Total	54	244	1	2.17	46	8
		15-39	15	62	—	.39	—	—
		40&Ov.	39	182	1	1.78	56	9
6	Albumin in urine without casts within 5 yrs.	Total	59	434	8	4.62	173	99
		15-39	19	147	—	.82	—	—
		40&Ov.	40	287	8	3.80	211	108
	more than 5 years	Total	31	167	3	2.46	122	116
		15-39	6	36	—	.25	—	—
		40&Ov.	25	131	3	2.21	136	120
7	Albumin in urine without exam. for casts within 5 yrs.	Total	190	968	21	9.39	224	298
		15-39	68	376	2	2.06	97	25
		40&Ov.	122	592	19	7.33	259	370
	more than 5 years	Total	56	279	2	2.30	87	297
		15-39	30	140	—	.74	—	—
		40&Ov.	26	139	2	1.56	128	353

Build Group (3) (Continued)

Code	Impairments	Ages at Issue	Entr.	Expos.	Deaths Act.	Deaths Expect.	Ratio No.	Ratio Amt.
17	Occasional excesses as to alcohol	Total	290	1,246	14	11.16	125	77
		15-39	133	568	4	2.99	134	62
		40&Ov.	157	678	10	8.17	122	82
18	Steady free user of alcohol	Total	1,369	10,386	141	108.17	130	131
		15-39	653	4,732	43	27.07	159	203
		40&Ov.	716	5,654	98	81.10	121	113
24	Renal colic within 5 yrs.	Total	42	255	1	3.13	32	14
		15-39	19	95	—	.53	—	—
		40&Ov.	23	160	1	2.60	39	26
	more than 5 years	Total	40	209	5	3.45	145	36
		15-39	2	14	—	.11	—	—
		40&Ov.	38	195	5	3.34	150	36
25	Rheumatism-acute articular	Total	250	1,284	17	12.12	140	101
		15-39	109	639	2	3.53	57	34
		40&Ov.	141	645	15	8.59	175	121
42A	Abdominal girth greater than chest expanded 0-1 in.	Total	90	671	15	10.14	148	87
		15-39	21	143	2	.87	230	427
		40&Ov.	69	528	13	9.27	140	72
42B	1 1/4-2 inches	Total	22	162	3	2.03	148	61
		15-39	7	58	—	.31	—	—
		40&Ov.	15	104	3	1.72	174	68

Build Group (3) (Continued)

Code	Impairments	Ages at Issue	Entr.	Expos.	Deaths Act.	Deaths Expect.	Ratio No.	Ratio Amt.
42C	Abdominal girth greater than chest expanded 2 1/4-3 in.	Total	1	4	—	.03	—	—
		15-39	1	4	—	.03	—	—
		40&Ov.	—	—	—	—	—	—
42D	all over 3 inches incl.	Total	2	9	—	.14	—	—
		15-39	—	—	—	—	—	—
		40&Ov	2	9	—	.14	—	—
56	Apoplexy or paralysis in family record	Total	96	632	7	8.40	83	54
		15-39	20	89	1	.49	204	138
		40&Ov.	76	543	6	7.91	76	47

Build Group (4)

Code	Impairments	Ages at Issue	Entr.	Expos.	Deaths Act.	Deaths Expect.	Ratio No.	Ratio Amt.
	Total Build Group (4)	Total	3,253	19,471	220	180.16	122	112
		15-39	1,629	9,259	87	49.67	175	195
		40&Ov.	1,624	10,212	133	130.49	102	92
18	Steady free user of alcohol	Total	249	1,919	22	19.23	114	67
		15-39	109	834	12	4.76	252	230
		40&Ov.	140	1,085	10	14.47	69	43

TABLE G

Issues of 1907 to 1922, Exposed to 1924
Number of Policies Terminated by Death From Principal Causes
With the Death Rate per 100,000 Exposed to Risk

	Policy Years 1-5 Ages at Issue				Policy Years 6 and Ov. Ages at Issue				All Policy Years Ages at Issue			
	All Ages	15 to 29	30 to 44	45 & Ov.	All Ages	15 to 29	30 to 44	45 & Ov.	All Ages	15 to 29	30 to 44	45 & Ov.
Tuberculosis												
Gen. Exper. Deaths	1273	659	454	160	1227	527	506	194	2500	1186	960	354
Gen. Exper. Rate	34	43	28	27	61	64	58	63	43	50	38	39
Overweight Deaths	19	2	10	7	41	5	21	15	60	7	31	22
Overweight Rate	6	4	5	7	22	21	21	26	12	10	11	14
Pneumonia												
Gen. Exper. Deaths	1615	508	564	543	1115	293	454	368	2730	801	1018	911
Gen. Exper. Rate	43	33	35	92	56	36	52	120	47	34	41	102
Overweight Deaths	159	19	57	83	103	6	54	43	262	25	111	126
Overweight Rate	48	42	31	79	56	25	53	75	51	36	39	77
Cancer												
Gen. Exper. Deaths	1050	68	356	626	1440	105	550	785	2490	173	906	1411
Gen. Exper. Rate	28	4	22	106	72	13	63	255	43	7	36	157
Overweight Deaths	140	—	26	114	219	1	54	164	359	1	80	278
Overweight Rate	42	—	14	108	120	4	53	286	69	1	28	171
Diabetes												
Gen. Exper. Deaths	154	52	61	41	302	55	111	136	456	107	172	177
Gen. Exper. Rate	4	3	4	7	15	7	13	44	8	5	7	20
Overweight Deaths	23	2	7	14	109	7	51	51	132	9	58	65
Overweight Rate	7	4	4	13	60	29	50	89	26	13	20	40

TABLE G (Continued)

Issue of 1907 to 1922, Exposed to 1924
Policies Terminated by Death From Principal Causes With the Death Rate per 100,000 Exposed to Risk

	Policy Years 1-5 Ages at Issue				Policy Years 6 and Ov. Ages at Issue				All Policy Years Ages at Issue			
	All Ages	15 to 29	30 to 44	45 & Ov.	All Ages	15 to 29	30 to 44	45 & Ov.	All Ages	15 to 29	30 to 44	45 & Ov.
Diseases of Liver and Gall Bladder												
Gen. Exper, Deaths	258	33	96	129	306	32	141	133	564	65	237	262
Gen. Exper. Rate	7	2	6	22	15	4	16	43	10	3	9	29
Overweight Deaths	52	3	16	33	66	1	30	35	118	4	46	68
Overweight Rate	16	7	9	31	36	4	30	61	23	6	16	42
Total Degenerative Diseases												
Gen. Exper. Deaths	2947	211	912	1824	4818	294	1524	3000	7765	505	2436	4824
Gen. Exper. Rate	79	14	56	310	240	36	173	976	135	21	97	538
Overweight Deaths	611	13	161	437	1224	22	374	828	1835	35	535	1265
Overweight Rate	183	29	88	415	669	91	369	1446	355	50	188	778
Apoplexy, Paralysis and Softening of Brain												
Gen. Exper. Deaths	729	20	173	536	1278	52	391	835	2007	72	564	1371
Gen. Exper. Rate	19	1	11	91	64	6	44	272	35	3	22	153
Overweight Deaths	171	1	33	137	342	2	96	244	513	3	129	381
Overweight Rate	51	2	18	130	187	8	95	426	99	4	45	234

TABLE G (Continued)

Issue of 1907 to 1922, Exposed to 1924
Policies Terminated by Death From Principal Causes With the Death Rate per 100,000 Exposed to Risk

	Policy Years 1-5 Ages at Issue				Policy Years 6 and Ov. Ages at Issue				All Policy Years Ages at Issue			
	All Ages	15 to 29	30 to 44	45 & Ov.	All Ages	15 to 29	30 to 44	45 & Ov.	All Ages	15 to 29	30 to 44	45 & Ov.
General Paresis of Insane and Insanity												
Gen. Exper. Deaths	175	25	84	66	225	42	113	70	400	67	197	136
Gen. Exper. Rate	5	2	5	11	11	5	13	23	7	3	8	15
Overweight Deaths	27	2	6	19	23	2	13	8	50	4	19	27
Overweight Rate	8	4	3	18	13	8	13	14	10	6	7	17
Heart Disease												
Gen. Exper. Deaths	839	79	282	478	1353	88	388	877	2192	167	670	1355
Gen. Exper. Rate	22	5	17	81	67	11	44	285	38	7	27	151
Overweight Deaths	163	3	51	109	335	6	88	241	498	9	139	350
Overweight Rate	49	7	28	103	183	25	87	421	96	13	49	215
Angina Pectoris												
Gen. Exper. Deaths	380	4	91	285	605	16	164	425	985	20	255	710
Gen. Exper. Rate	10	—	6	48	30	2	19	138	17	1	10	79
Overweight Deaths	77	2	20	55	165	1	45	119	242	3	65	174
Overweight Rate	23	4	11	52	90	4	44	208	47	4	23	107

TABLE G (Continued)

Issue of 1907 to 1922, Exposed to 1924
Policies Terminated by Death From Principal Causes With the Death Rate per 100,000 Exposed to Risk

	Policy Years 1-5 Ages at Issue				Policy Years 6 and Ov. Ages at Issue				All Policy Years Ages at Issue			
	All Ages	15 to 29	30 to 44	45 & Ov.	All Ages	15 to 29	30 to 44	45 & Ov.	All Ages	15 to 29	30 to 44	45 & Ov.
Arterio-Sclerosis												
Gen. Exper. Deaths	122	2	30	90	202	3	49	150	324	5	79	240
Gen. Exper. Rate	3	—	2	15	10	—	6	49	6	—	3	27
Overweight Deaths	34	—	5	29	51	2	13	36	85	2	18	65
Overweight Rate	10	—	3	28	28	8	13	63	16	3	6	40
Bright's Disease												
Gen. Exper. Deaths	702	81	252	369	1155	93	419	643	1857	174	671	1012
Gen. Exper. Rate	19	5	15	63	58	11	48	209	32	7	27	113
Overweight Deaths	139	5	46	88	308	9	119	180	447	14	165	268
Overweight Rate	42	11	25	84	168	37	117	314	87	20	58	165
Total From All Causes												
Gen. Exper. Deaths	16981	5274	6296	5411	15738	3407	5947	6384	32719	8681	12243	11795
Gen. Exper. Rate	453	345	386	919	784	415	677	2077	568	369	487	1316
Overweight Deaths	2152	205	850	1097	2576	130	974	1472	4728	335	1824	2569
Overweight Rate	645	451	465	1041	1408	537	960	2571	915	481	642	1580

We also studied these groups of overweights from the standpoint of principal causes of death giving a rate per one hundred thousand exposed to risk as compared with the general experience. There is a higher rate shown in cancer, in diabetes at the older ages, in all the degenerative diseases, in diseases of the liver and gall bladder. Strange to say, we get no higher rate for pneumonia, but, on the other hand, a comparatively lower rate at the older ages. This is, we think, contrary to the general opinion that overweights do badly with pneumonia. These results are given in Table G.

We feel from this survey of a number of years of selection in overweights that our mortality in Groups 2 and 3 is improving. Group 4 represents but a very small number of entrants and we believe that we can obtain a working mortality in this group by the use of modified plans for short periods. This belief is borne out by a preliminary study of some of the more recent years' exposure for shorter periods—these figures we have not given in this paper because they are only comparative and have not as yet had sufficient exposure to be of definite value.

We are satisfied that we can insure overweights, selected as we select them, at standard rates, and for Group 4, on modified plans for a limited number of years and obtain a working mortality within proper limits. We trust that our later investigations will prove us to be correct.

Dr. Whitney—Will Dr. Ward kindly discuss the paper?

Dr. Ward—Mr. Chairman and Gentlemen: In the first place, I think I should state that I feel that the Association is very greatly indebted to the Mutual Life for these statistics. The problem of overweights is not an occasional problem. It is a problem which confronts every medical director every hour of the day, for I think that about 10 per cent of the cases coming before us are 15 or more per cent overweight. I have therefore made a few notes regarding Dr. Weisse's paper.

The question of overweight is one that is constantly present with every Life Insurance Company; consequently we are greatly indebted to Dr. Weisse and Mr. Strong for their valuable contribution. Ever since the publication of the report of the Medico-Actuarial Committee, we have known the mortality of the overweight classes. The question that has confronted us has been: "Is it possible by a careful selection to insure certain members of the overweight groups without incurring the high mortality of the class as a whole?"

In this study, the overweights have been divided into three groups, Classes Two, Three and Four.

Class Two consists of those whose overweight is from 15% to 25% above the average. Class Three, those whose overweight is from 25% to 35% above the average, and Class Four, those whose overweight is from 35% to 50% above the average.

Dr. Weisse sets forth the methods that have been employed by the Mutual Life in an endeavor to separate the big man from the fat man, and to this procedure he attributes the success that the Mutual Life has obtained. He also lays emphasis upon the family record and especially upon those family records which show both heavyweight and longevity.

Table C presents some interesting data. In that table it is shown that during the first five years there is not an appreciable increase of Class Two above the Company's general experience, but not so with Class Three, for even during the first five years this Class shows an increased mortality of 22% by lives and 30% by amounts.

The experience of the first eleven years shows a still greater increase for in this experience Class Two shows an increase of 13% by lives and 9% by amounts, and Class Three shows an excess mortality of 24% by lives and 31% by amounts, while Class Four shows an excess mortality of 43% by lives and 29% by amounts. It is, therefore, obvious that during

these early policy years, when overweights are supposed to be at their best, there is a substantial increase in mortality notwithstanding an attempt at hyperselection.

In the issue of 1900 to 1904, excluding the first ten years, the mortality appears to be very high, being 124% and 128% in Class Two; 162% and 190% in Class Three; and 189% and 176% in Class Four. Unfortunately, we do not know the Company's general experience for this period and so we have not the value of a comparison of the mortality of the Build Groups with the mortality of the Company. These tables seem to me to indicate that with proper selection we can accept Build Group Two (15%-25% above the average) as standard risks, but when we enter Build Group Three, we will experience a mortality of from 20% to 30% above our general experience during the early years, and this mortality will be materially higher during the later years. After reading this paper, based upon such a careful selection, I am forced to agree with a statement made by Dr. Rogers at a meeting of this Association in 1902. At that time Dr. Rogers said: "I think that there is only one conclusion to be drawn from these facts, and that is that any Company that accepts risks on lives 25% or more overweight, is going to have a high mortality among those lives.

"From observations of my own, I am able to say with the utmost confidence that a high mortality will occur whether policies are issued on life tables or on endowment tables, and in spite of the care shown in their selection."

Dr. Whitney—I had asked Dr. Fisher to discuss this paper. Dr. Thorndike, will you care to represent your Dr. Fisher?

Dr. Thorndike—Mr. President and Gentlemen: The overweight has had the old saying that, "nobody loves a fat man," rigorously impressed on his mind by the Medical Director. Since the old belief that the overweight was a better risk than the underweight was learned to be erroneous

the former has been roughly handled in his attempts to get insurance. As suggested in the paper, he has taken steps to better his condition. Public propaganda has led him to make the attempt to get into a better class by strenuous effort. The public interest aroused by the introduction of insulin, directed the overweight's attention to the fact that his excess baggage was more than a discomfort and a hindrance to insurance; that it was an actual menace to health. The reduction job is a hard one and apt to be spasmodic. The reduced overweight must show, by time, that he can keep the better figure attained. With all improvements, the overweight is the problem he always has been. The time spent on him is an indication of that.

The Northwestern's method of selection is along the lines brought out in the paper. The agent is allowed to send in applications on risks coming within the limits of the table of graded average weight of the Medico-Actuarial investigation. He is instructed to send incompletes on those either above the maximum weight or below the minimum. The build, the occupation, habits in eating and drinking, etc., are then considered. Since our first investigation in 1886, by Emory McClintock, stress has been laid on the family history. A good family history helps to push the borderline case over the line.

Four investigations made by the Northwestern, the fourth being that of the data furnished to the Medico-Actuarial investigation, all of which have been reported to the Association, show that the greater the weight over the average, the higher the mortality, especially at ages 35 to 50. The figures obtained when the family history was taken into account, show that this is a distinct factor in selection.

The latest available figures we have is a count of the issues of 1906 to 1915, carried to anniversary in 1920, on the A. M. Table:

Over Average Weight Mortality of
The Northwestern Mutual Life Insurance Company
Issues of 1906-1915 to Anniversary in 1920 A. M. Table

+25 to 34 pounds	First Five Years Number of Policies	First Five Years Number of Deaths	First Five Years Ratio %	All Years Number of Deaths	All Years Ratio %
Influenza Included	24115	511	98.33	1121	93.35
Influenza Omitted	24115	455	91.55	970	85.60
Limited to plan only	357	11	125.20	24	95.63
+35 to 44 pounds	First Five Years			All Years	
Influenza Included	12009	279	92.75	634	91.80
Influenza Omitted	12009	236	83.70	543	83.75
Limited to plan only	381	4	12.41	23	85.79
+45 pounds and over	First Five Years			All Years	
Influenza Included	6827	138	84.54	373	88.66
Influenza Omitted	6827	131	83.10	331	78.41
Limited to plan only	1787	40	92.00	106	92.46

These run so much higher than our general average, that we feel it is not possible to select an exceptional class of overweights with a good mortality. The situation, as it seems to me, comes to this—that knowing we are dealing with a class that gives a high mortality, we must make up our minds where, above the general average, we want to draw the line, and issue up to that line.

Dr. Whitney—Dr. Jaquith will continue the discussion.

Dr. Jaquith—Mr. President and Gentlemen: I feel very grateful to Dr. Weisse and Mr. Strong for their very valuable contribution and regret very much that I have no statistics of my own company to present. The remarks that I have to make were written before I had heard any of this discussion, so I may make some repetitions. However, I shall read them.

Not so long ago some Medical Directors were influenced by their own build and attained age in their liberality or severity in dealing with overweights. Again, if an early claim on an overweight came to the Medical Director's attention he, for a time at least, would be more severe in his treatment of that class of risks. With the publication in 1913 of the results

of the Medico-Actuarial investigation, we were placed in a position to deal more intelligently with overweights.

Inasmuch as it has been the practice of the Mutual Life to exclude "fat" rather than "big" men, there would seem to be no doubt but that the comprehensive questionnaire sent to the Medical Examiner, if satisfactorily answered, has materially aided in the exclusion of "fat" men.

It is observed that in Build Group 4, Table C, policy years 1 to 5 and 1 to 17, there was a very much higher mortality for age groups 20 to 29 and 30 to 39 than in the older age groups. I should like to know the explanation for this. Was the selection more liberal at the younger ages? Was the Influenza epidemic a factor? Or might the increased mortality have been due to a combination of both?

The mortality ratios given in Table C, issues 1900 to 1904, appear to confirm the statement in the paper that prior to 1904, overweight risks were selected more liberally than in the last 20 years.

As compared with the mortality ratios of overweights in the Medico-Actuarial investigation, there must have been "Super-selection" to obtain the results shown in many of the age groups, policy years 1 to 17 in Table C.

Comparing the mortality ratios on pages 15, 16 and 17, Volume 11, of the Medico-Actuarial investigation with the figures given in Table E for short, medium and tall men in the paper under discussion, it would appear quite evident that "Super-selection" was not practiced by all the Companies supplying the material entering into the investigation because a considerably higher mortality was experienced.

The increased mortality in overweights having a physical impairment, I believe, is what might be expected. That a family record of apoplexy or paralysis and heart disease combined with overweight should effect the mortality is significant

and should lead us to exercise caution in dealing with such cases.

Impairment Codes 6 and 7—history of albuminuria—Table F, show increased mortality at the older ages, which I think is the result we should expect. I am led to inquire if the higher mortality obtained in Impairment Codes 17 and 18—occasional excessive use and steady free user of alcohol—Table F, might have been due to a more liberal selection at the younger ages and also to a lowered resistance of such risks when attacked by Influenza, Pneumonia or other severe acute diseases.

In connection with the mortality experienced in Impairment Code 24—renal colic more than 5 years—Table F, Build Group 3—actual deaths, 5, expected 3.45, a ratio of 145, I wish to refer to a statement by the late Dr. Symonds in a paper entitled: "A Statistical Study of Renal Colic and Hepatic Colic," presented at the Nineteenth Annual Meeting of this Association held in October, 1908. It is as follows: "Among those risks who had only 1 attack of renal colic, there were 92 who were overweight, with actual deaths of 12 and expected 8, a ratio of 150." One of his conclusions was: "The combination of overweight and renal colic is very serious."

Compared with the general experience in deaths per one hundred thousand from Pneumonia, it was rather surprising to me that there was no increase in overweights but on the other hand a decreased rate at the older ages.

In conclusion, I wish to again thank the authors for making available to us such helpful statistical data on overweights.

Dr. Whitney—Dr. Dwight, will you kindly consider continuing the discussion?

Dr. Dwight—Mr. President and Gentlemen: I am very glad of the opportunity to say a few words in connection

with this subject of overweights for several reasons. First, because it is one of the most important subjects with which we have to deal; we have about 10 per cent of our business submitted to us from among this group. Second, because there is a very considerable difference of opinion in connection with the way in which it has been handled. And third, for a more personal reason, because it was the second investigation which our company made, and the results of that investigation cheered up our executive officers to such an extent that they allowed me to continue with a complete investigation of all of our results. This dates back to 1905 or 1904, and Dr. Rogers, I will say, and the New York Life are entirely responsible for our starting in to find out what was really happening. Our executive officers were divided on some points, but they were unanimous in doubting as to what we were to obtain as a result of that examination, but they allowed me to go ahead. They said they would not tell me how far I could go.

We had at that time a President and a Vice President, both very able men. The President was large, portly, fond of the good things of life and who believed that fat men were pretty good risks. We had a Vice President, who was an active man, who, while of good size himself, had a family history of thin people, and he believed that fat men were very bad as our President believed that thin men were very bad, and our investigation of heavyweights demonstrated that they were both right and both wrong. It was very popular from different points of view.

First, I want to impress upon you that I am talking from the point of view of a company which is not doing substandard business as such, which is not increasing the rates or the ages, irrespective of what the facts in regard to the individual may be if he is accepted. And then I want to entirely agree with the statement of Dr.

Rogers, which has been quoted and which faced me like a slap in the face when I started to do anything with heavyweights. There was no man, there was no Company, that really knew what was happening to heavyweights excepting Dr. Rogers and the New York Life and he said they absolutely didn't do what I started out to do. Then in connection with the mortality which I experienced in that heavyweight group, I agree with him that based on the ordinary careful selection of risks as they come to your table, any company which accepts heavyweights over 25 per cent overweight, will obtain a mortality increasing in seriousness as that percentage of overweights increases and increasing in seriousness as the age increases. There is no question about that. You have got to go some way beyond the ordinary selection if you are going to get good results in heavyweights.

Notwithstanding that, I believe that the Mutual Life and Dr. Weisse are not only right, but perfectly safe and are proceeding along the right line. I believe that if they will follow and modify their selection according as they find it necessary that they can obtain a mortality on heavyweights which will not be far if any higher than the general mortality of their company. I believe it because we have been doing it for something over twenty years.

In a general way, I am not going to talk figures much, but I want to speak a little in regard to the outstanding facts which we have found and which I think are obvious to anybody who really makes a study of this question. First, the result will depend upon whether the figures are at the attained ages or ages at entrance. It has been said here by someone that the high mortalities were between 30 and 50 in certain groups. That is so as based on the medico-actuarial investigation and is so, I believe, because those figures are based on ages at entrance. Our original figures were based on the attained ages and they showed no such drop after age 50

as the medico-actuarial figures do. If you take them at attained ages, you will get a steadily progressing mortality as life goes on. If you take them at ages at entrance, you will get a steadily increasing mortality up to or about 50, then a quite radical drop; the height, the grade of ascent and the grade of the drop depending upon the method of selection and the amount of the heavyweight. I believe that every company will give you in a general way the same mortality side by side according to the figures. There is no material difference between our figures and Dr. Weisse's, but when I speak of our figures, I mean our mortality preceding our present method of selection. I believe that when he considers the type of heavyweight he is wise. He uses the terms "draught horse" and "trotting horse" or something else. We in our office use the terms "beef cattle" and "dairy cattle." Those of you who have farms and have cows know that you can feed the same amount of grain, give them the same amount of exercise and the same proportion of water, everything exactly alike, and yet when you compare the two types, you will find that one cow will put on 500 pounds, if you give it time, and another will put on more than 10 times that. And perhaps another will not put on any fat. The belief grows stronger all the time that in a general way there is a "beef" type and another type, call it "dairy" if you want to, of humans.

I believe that the family history is of the utmost importance in selection. If the family is fat, it is always a good plan to look over the mortality and if they were fat, they probably died young. There are exceptions, but the majority show that experience. If your blanks allow for the ages of the grandparents, which ours do—and which I know are not exact but are relative and suggestive—you will find that as a rule a high mortality, but if you have got an honest-to-God, good straight family history, and those people were heavy-

weights, and they lived for a good while, I believe it is of value.

There is one thing, however, that has not been brought out and which I want to stress. In every group of normal heavyweights, irrespective of whether they are 5 per cent overweight or 60 per cent overweight, there is a period when under ordinary methods of selection you will obtain a good mortality; there is a period longer or shorter, depending upon the other factors, where the mortality will be not only below the average, but below your experience whatever it may be. That period is in early life. Dr. Rogers in his original statement which has been quoted and which I agree with almost altogether, says that it makes little difference—I won't say no difference—whether it is on life or Endowment forms I disagree with him. I disagree with him very strongly. I believe that you can have good risks for $2,000 and good risks for $1,000. The mortality experience by amounts will be better if you are insuring all your risks at the same amount. Isn't it a fact that as these cases get worse in age the amount of risk is reduced? The first thing that struck me and our company in our investigation of this question of weights—and we were using Shepherd's Table and attained ages—was the interesting fact that the so-called normal weights did not have the best mortality and was not the most common weight, I mean the normal weight of Shepherd's Table, but it did have one quality that differed from any other group selected on the 5 per cent. It was the only group that partook of the mortality of the lightweights and of the heavyweights as well, the characteristic mortality of the lightweights being a little higher mortality in early life and of the heavyweights a high mortality in later life. In Shepherd's Table, the normal weights gave us a little higher mortality in early life and a little higher mortality in later life. At 25 per cent overweight, our experience showed a mortality just a point or two above 100 per cent of the Amer-

ican Table, and for that reason, we began our study. We thought if they got below the American Table, we could take care of them and write a little of general selection—and we did.

In early life the mortality was extremely good. We crossed the normal line—this is guesswork, but the figures put it at about 55 at 30 per cent overweight. At 40 per cent we would cross the normal line at about 50. At 60 per cent overweight, we would cross the normal line at about 40, but in all of those groups prior to the time when it crossed the line it gave us a mortality better than our average. I am assuming now that we began at age 20. We went on this assumption, that if we took lightweights after they had given us a normal mortality by age, we came out of it very well. If we limited our heavyweights to the period our experience showed, it gave us a good mortality. But we didn't want to do that because we didn't want to be quite so severe, so we used Endowments in order to reduce the hazard during the period when we carried it. A man will apply to us at 30 who had a mortality, we will say, of 150, roughly, and whose line on account of his weight would cross the American experience at 50. We could give him any form of insurance which would let us out at the period when he crossed the normal line. If, however, we didn't get out of it quite so quickly, if we carried him up to 55 or 60, when his line crossed the normal at age 50, we feel we had a very materially added protection by giving him a 20-Year Endowment instead of the Life terminating at that age. By the use of that method as a basis, following beyond what the line suggested by Dr. Weisse in his paper, and establishing the fact that in every other way he was better than the average, not normal, not average, but better than the average, we started out after him. We have been at it twenty years and we haven't changed our mind. Every time we have taken account of stock, which is, I think three or four times during those twenty years, we

have found that our mortality on heavyweights up to 40 per cent overweight was at or below our average mortality for the same period. After 40 per cent, which I acknowledge has not been a very large class, but we have taken quite a lot of them, they have been a shade high, but at no time has our mortality of heavyweights selected by that general way been abnormal.

Dr. Whitney—Gentlemen, the subject is ready for an open discussion * * *. Perhaps to have had a well-rounded discussion, I should have requested some of the companies doing substandard business to discuss this. Perhaps some of them are ready to give us the benefit of a few remarks at this time.

Dr. Ward—I should like to know from Dr. Rogers whether his opinion has been materially changed since the time he made the statement which I quoted in my remarks.

Dr. Rogers—Mr. President and Gentlemen: I am sorry to be obliged to confess that my opinion about overweights has not changed a bit. On the contrary, I think that the paper we heard today really supports the opinion that Dr. Ward has quoted. I am sorry to say that I have been absent from the city for more than a month and that I have had no opportunity to study this splendid paper of Dr. Weisse. I saw it for the first time within the last fifteen or twenty minutes; but I have seen enough in it to believe that the statement, that I am said by Dr. Ward to have made, is supported very strongly by Dr. Weisse's statistics.

Table C shows the general experience of the company in the first five policy years to have been 73 per cent by numbers and 76 per cent by amounts of the table used. Build Group 2 shows in the first 5 years a normal mortality, that is to say, 77 per cent. Build Group 3 shows a mortality of 106 per cent of the table used, which is about 140 per cent of the general experience of the company. Build Group 4 shows a very brilliant selection, because the Mutual

Life succeeded in securing during the first 5 years a mortality in that group measured by amounts of 90 per cent of their general experience. I think that is very remarkable and it shows that the claim just made by Dr. Dwight has decided merit. It is possible to select overweights so favorably that, at least during the earlier years while the effect of medical selection runs, you can get a good mortality among them.

But let us see what happened during the entire insurance period of 17 years. This we find in the second paragraph of Table C. The general experience of the company, measured by amounts, was 83 per cent. That is the normal mortality. In Build Group 2 the mortality was, in round numbers, 115 per cent. In Build Group 3 it was 140 per cent of their general experience; and in Build Group 4 it was 140 per cent; a strikingly good mortality, but still a mortality very substantially above the general average of the company. That, I think, is the real gauge and not the table or yardstick that was used to measure these risks.

Taking the third and fourth tables in Dr. Weisse's Table C, policy years 6 and over by attained ages, the general mortality of the Company is 92 per cent of the yardstick used. Build Group No. 2 shows a mortality of 113 per cent, which is 125 per cent of the general experience of the Company. Build Group 3 is 140 per cent and Group 4 is 170 per cent of their general experience.

Then take the years 11 and over by attained ages and assuming that the general mortality of the Company remained about the same, 92 per cent * * *.

Dr. Weisse—That is a different selection prior to 1904.

Dr. Rogers—You see, Dr. Weisse, I am awfully unfamiliar with the details of this excellent paper, but here is what happened prior to 1904 in their attempt at selection. Assuming 92 per cent of the yardstick used to be the normal, the mortality in Group 2 by attained ages is 140 per cent; in Group

3 is substantially 210 per cent; and in Group 4 is substantially 195 per cent.

Now I have a certain sympathy for what Dr. Dwight has said about the use of Endowments. Personally, I do not believe in the idea. There is no doubt that a company is able to carry, and carry successfully, rather highly impaired lives on Endowment tables for the reason that an Endowment insurance is substantially life insurance plus savings bank, and the more savings bank there is, the less life insurance there is. A company loses less in insuring by Endowments because the reserve put up against the insurance is so much greater. And so we come, I think, to the underlying philosophy of the whole subject. Everyone of us has in his mind, in making a selection for his company, something like this question: Is this risk which I am passing upon entitled to membership in my company, to be treated in every respect on a level of equality with the other members of the company. That is fundamentally what each one of us is aiming at with respect to each risk that we pass upon.

Of course, no two risks for life insurance are of exactly the same value. They differ by insensible degrees from the best at one end of the line to the poorest at the other end of the line. We all recognize that fact and endeavor to fix upon a point on the line, somewhere between the best and the worst, beyond which any risk is not entitled to treatment on a level of equality with the rest.

I think it was Dr. Dwight who spoke about the American Table, which represents a mortality of probably 130 or 140 or even 150 per cent of what most of our companies are now getting. I doubt very much that we can say today that every risk that comes within the limits of the American Table is entitled to treatment as a standard risk, on a level of equality with the rest of the membership of the company. I don't believe it. I believe, on the contrary, that if we go beyond, let us say, 120 or 125 per cent of the mortality of our own

company, we are showing a degree of discrimination that we have no right to show—no moral right. I can easily understand that a life company, that confines its activities to strictly standard risks, may be pushed by the exigencies of business to extend membership to persons who really, morally, have no right to membership in the company, and I believe that this is what is happening where risks show a mortality like that indicated in Dr. Weisse's paper. Risks of that kind, which, at the later ages of life or after they have been carried on the books for a number of years, show a mortality substantially above that which they show in the earlier years of insurance are not good risks. It is true that every one of our companies is able to carry a certain amount of that sort of timber. If we choose, we can take a small proportion of risks that we know in our heart will produce a mortality of 200 per cent or 250 per cent, and we will not find it on the surface of the company's bookkeeping. Such a procedure is perfectly safe. But is it right? Personally, I believe that it is not right. Risks, which, after our best efforts, produce a mortality of 140 or 150 per cent of our general experience, ought to be penalized. They are substandard risks. If we put them on Endowment tables, we are saving our faces to a certain extent, but the moral obligation, I think, remains the same.

Dr. Whitney—The question is still open for discussion. Are there any further remarks? * * * You have heard the discussions, Dr. Weisse, will you close the discussion?

Dr. Weisse—Mr. President and Gentlemen: In the first place, I want to thank the members who have been kind enough to discuss my paper. Dr. Rogers' views are not new to me. Dr. Dwight's views I am very glad, indeed, to hear, because they make me feel that we are going in the right direction. We studied very carefully, as you will see when you read my paper, the question of each individual's build, not alone as an individual, but in relation to the family history

and to the type of family physique. We do everything possible, sometimes writing as many as half a dozen letters on a case, occasionally having a case inspected to see how nearly the information we are obtaining is correct. The investigation may cover a couple of weeks before we determine what we are going to do with an individual. It is not only purely individual selection, it is super-selection. There is no question about it.

Now, you must remember in reading this paper that the group of cases referred to from 1900 to 1904 is a group of cases selected at the time when volume of new business was the great thing. Those were the days that I know only by hearsay. I wasn't in the life insurance business then and there are not so many of the members here who can remember that time. It was a rush for business, pure and simple. I think that ought to be considered when you compare the results of our experience in that group of cases with the group of cases from 1907 to 1924.

We get all possible data on the question of build in these cases and are very particular in trying to eliminate the "fat" as compared with the "big" man, especially the big man with the big body and short legs—especially when that physique is a family characteristic.

As I have said, it is pretty hard to say how many pounds of fat a man may carry. We try to find out whether the fat a man has consists of a normal, thin, firm cushion of fat equally distributed over his body, or thick layers of fat or flabby rolls of fat, a big abdomen, and so forth. We are endeavoring all the time to get more definite data in these cases. Whether we are succeeding, or not, I can't say. It will probably take us ten years to find out. The heavier weights we are trying to take care of, either by Endowment or by what we term a modified life policy, that is where the applicant agrees at the end of a certain period to accept the paid-up value of the policy and go off our books. Most of

these heavier weights are limited to a ten-year period, for we are willing to take a chance for ten years on some of them. Whether we are right or not, we do not yet know.

I do not know that I have anything further to say except to thank the members of the Association for their attention and interest.

Dr. Whitney—I will ask Dr. Frost to make a further report in regard to the Cardio-Respiratory Test.

Dr. Frost—Most of you will remember that at the annual meeting in 1922 we presented a new test which we had developed, called the Cardio-Respiratory Test, which was intended as an aid in determining cardio-vascular function. We have been continuing our work with this aid and are prepared at present to give a limited experience, drawn up by Mr. Dow, our Actuary.

This investigation included 1,608 policies, representing $10,800,000 of insurance. 255 of these policies for $1,530,002 insurance were reissued or cancelled, hence never in force; the balance, 1,353 policies for $9,354,583 of insurance is included in our investigation. The investigation closed with the status on September 1st, 1925, and no insurance had a mean duration of over four years. The insurance provided $20,666,547 of policy years exposure with expected deaths on the American Men Select Table of $54,051. The actual deaths under four policies amounted to $18,000, making the percentage 33.30 by this table.

One of these deaths was due to a carcinoma of the rectum, which developed about four months after the man was accepted. Another death was due to an attack of acute appendicitis and peritonitis. Another was due to suicide. The fourth death was of a man who was one of a group of nearly 100, a group which was exceptionally good otherwise. The man himself was a very poor risk and if taken singly would have been declined, but he was accepted with the entire group and died a little while after.

You will observe on pages 65 and 66 a set of tables which we have drawn up. There have been somewhat over 2,400 individuals to whom we have applied this test. Of these we have accepted 65 per cent. In other words, we at present are accepting for standard insurance nearly 65 per cent of these individuals whom formerly we declined. The total amount of insurance was about $10,800,000. We have given a table showing the various impairments for which we applied the test such as heart murmurs and enlargements; blood pressure, high and low; irregular and intermittent pulse; a few cases of goitre, etc.; overweights, underweights and a few cases with very poor family history. As far as the form of policy is concerned, we are giving about 35 per cent. Ordinary Life, about 33 per cent. Endowment—15 or 20 Year Endowment—while the remainder are divided up into Modified Life and other forms of policies.

Heretofore, we have not been able to give you much information regarding this test, for the simple reason that we did not have the experience. We are now beginning to accumulate experience and I can say without hesitation that it has confirmed our original hope with regard to this test. We believe we can get at the elements of cardio-vascular weakness.

Regarding the paper that Dr. Weisse has just presented on overweights, I am interested to note that his figures indicate a very large proportion of deaths as due to cardio-vascular and renal deterioration. In this group of cases, we have focussed our attention upon the condition of the cardio-vascular system. We believe that a big man, with a heart which has grown in proportion to his body and with kidneys which are proportionate in power to the rest of his body—not a man who has become fat, whose heart has of necessity become hypertrophied to withstand the extra strain and whose kidneys have been forced to undertake an increased load—we believe that a big man who shows through

this test an intact cardio-vascular system may be treated with considerably more leniency than a fat man.

We have passed around examples of two reactions, neither of which we accepted. First is a report on E. H. D. You will note from the examiner's notes that this man had a typical organic heart so far as could be determined by clinical examination. He gave a remarkably abnormal reaction. Particularly in Steps 2 and 4 it was impossible to depress his systolic pressure, to get it down below the base line, by any procedure. This man was examined on February 25; he dropped dead on March 31.

The second report is that of R. F. M. This man was only recently examined, on October 17th. You will note that here again we have a complete description of an organic heart of a serious type and his reaction to the test was definitely abnormal in two respects. In the first place, we were unable to depress his systolic pressure as we should, and in the second place, when put under a strain, his blood pressure refused to rise. The diastolic reaction given below shows a serious dropping off of the diastolic pressure. In other words, there is an individual of whom I will be willing to prognosticate, in view of my confidence in this test, that he may pass out at any moment from failure of his heart.

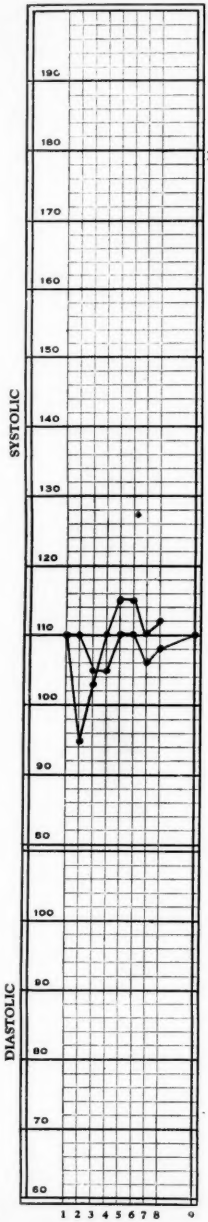
The man whom we accepted and whom I have already mentioned, A. B. A., one of the group of 100, gave a very abnormal test. He was unable to push his pressure up more than 10 millimeters in the three final steps, indicating to us that there was a very serious element of weakness in his cardio-vascular system, which was abundantly proved by his early death.

I have nothing more to add to the report. I want to say in conclusion that we put a great deal of confidence in it. It is a very valuable aid to us in selecting our cardio-vascular risks.

CARDIO-RESPIRATORY TEST

New England Mutual Life Insurance Company, of Boston, Mass.

Name A. B. A. Date February 18, 1925.



Blood Pressure and Pulse:—

Before Test:	*After Test:*
Systolic= 105	Systolic= 110
Diastolic= 65	Diastolic= 65
Pulse Rate= 80	Pulse Rate= 72

Vital Capacity= 210 cu. in.

Capacity Blown:—(1) 210 cu. in.
(2) 200 cu. in.
(3) 200 cu. in.

EXAMINER'S REPORT

Heart not enlarged. No murmurs.

Marked irregularity. Rate at apex 114.

Rate at radial artery 80. Marked alternation.

Auricular fibrillation. No evidence

of decompensation.

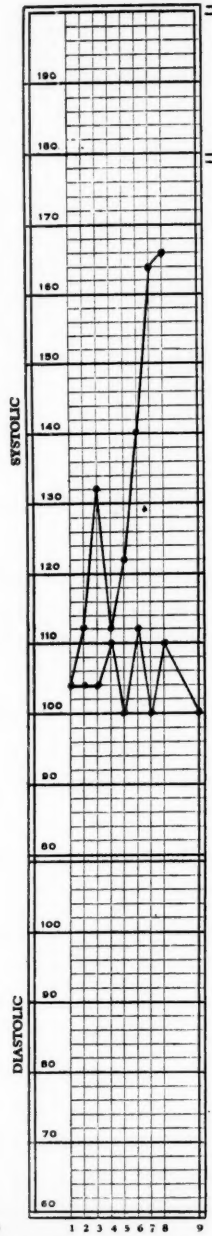
Medical Examiner

M-69-24

CARDIO-RESPIRATORY TEST

New England Mutual Life Insurance Company, of Boston, Mass.

Name E. H. D. Date February 25, 1925.



M-69-24

Blood Pressure and Pulse:-

Before Test:	*After Test:*
Systolic= 104	Systolic= 100
Diastolic= 0	Diastolic= 0
Pulse Rate=82	Pulse Rate= 82

Vital Capacity= 150 cu. in.

Capacity Blown:-(1)135 cu. in.
(2)135 cu. in.
(3)150 cu. in.

EXAMINER'S REPORT

Applicant has an old rheumatic history, also history of so-called inflammation of the heart in 1916.

On examination of the heart, the heart was found to be hypertrophied, apex beat in the 6th interspace. There was a systolic murmur heard all over the precordia, loudest at the apex, transmitted to axilla and around to the back. Diastolic murmur heard over aortic area transmitted to vessels of neck and downward along the sternum. Pistol shot murmur heard in groin. He has a marked pulsation of the vessels of the neck. Systolic blood pressure was 104 at the beginning of the cardio-respiratory test. There was no diastolic pressure.

Cardio-respiratory test showed slight variation from the normal, although the base-line showed considerable variation. The pulse rate was the same before as after the test, and the pulse was regular and of good quality before and after the test.

Applicant has unquestionably a rheumatic heart with aortic and mitral regurgitation. I would recommend that the applicant be declined outright.

March 31, 1925.

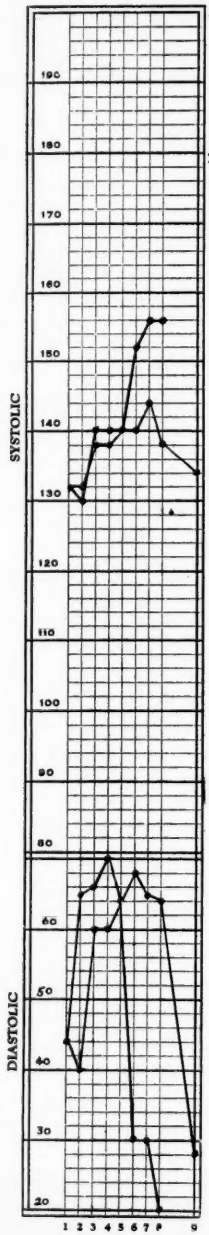
This applicant, within a few days, fell and immediately died. Apparently acute cardiac failure.

Medical Examiner

CARDIO-RESPIRATORY TEST

New England Mutual Life Insurance Company, of Boston, Mass.

Name R. F. M. Date October 17, 1925.



Blood Pressure and Pulse:—

Before Test:	*After Test:*
Systolic— 132	Systolic— 134
Diastolic— 44	Diastolic— 28
Pulse Rate— 80	Pulse Rate— 80

Vital Capacity— 120 cu. in.

Capacity Blown:—(1) 120 cu. in.
(2) 120 cu. in.
(3) 120 cu. in.

EXAMINER'S REPORT

This applicant had chorea when a child and within the next two years had two recurrent attacks. Ever since that time he has been of a nervous temperament and has not been able to engage in exercise, due to cardiac complications.

There is definite hypertrophy. The right border is 3½ cm. to the right of the mid-sternum. The left border is about 1½ cm. to 2 cm. outside the nipple line. There are definite systolic and diastolic thrills at the apex. There is a loud systolic murmur heard all over the precordia, most intensely at the apex; although loud elsewhere, somewhat louder over the base. Over the pulmonic area is a loud, blowing systolic murmur. Over the apex there is also heard a loud diastolic murmur but this seems to me to be later in diastole than at the base and, I believe, is a different murmur. He has definite pistol shot sign over the groin. He has dyspnoea on exertion.

This applicant clinically has a mitral regurgitation and stenosis along with an aortic regurgitation, all dating back to his attacks of chorea.

Cardio-respiratory test was interesting in that there was, as usual, in such cases practically no drop in Steps 2 and 4 and in the preliminary portions of Steps 6, 7 and 8. It is interesting, however, to note that during the corresponding part of these same Steps there was a rise in the diastolic pressure. The rise in the last three Steps was insufficient whereas the drop in the diastolic reaction of these same Steps was far above the normal. In the base-line there was some tendency to irritability.

He is not a good risk for insurance.

Medical Examiner

M-69-24

January, 1922, to October, 1925

TABLE I

Age Groups	Total Applicants		Accepted		
	No.	Per Cent of Total by Groups	No.	Per Cent of Total by Groups	Per Cent Accepted by Groups
15-29	751	30.43%	535	33.27%	71.24%
30-39	784	31.77	551	34.27	70.28
40-49	560	22.69	344	21.39	61.43
50+	373	15.11	178	11.07	47.72
Totals	2468		1608	65.15%	

TABLE II

	Accepted		Accepted	
	No.	Per Cent	Amount	Per Cent
Life	575	35.76%	$5,587,352	51.33%
Life—Ltd. Pay.	179	11.13	938,500	8.62
Life—Modified	89	5.53	515,140	4.73
Endowments	531	33.02	2,356,093	21.65
Term—Restricted	150	9.33	903,000	8.30
Term—Unrestricted	84	5.22	584,500	5.37
Total	1608		$10,884,585	

TABLE III

Impairments for Which Test Was Applied

	Total Applicants		Accepted	
	No.	Per Cent	No.	Per Cent
Heart Murmur	1414	57.29	916	64.78
Heart Enlarged	46	1.86	20	43.48
Heart Disease, etc.,	42	1.70	19	45.24
Blood Pressure—High	278	11.26	139	50.00
Blood Pressure—Low	59	2.39	48	81.36
Pulse—Irregular	127	5.15	96	75.59
Pulse—Intermittent	12	.49	9	75.00
Pulse—Rapid	93	3.77	74	79.57
Pulse—Slow	17	.69	14	82.35
Goitre	232	9.40	173	74.57
Other Circulatory Impairments	14	.57	8	57.14
Sugar	21	.85	11	52.38
Other Urinary Impairments	26	1.05	11	42.31
Overweight	27	1.09	16	59.26
Underweight	6	.24	5	83.33
Personal History	44	1.78	42	95.45
Miscellaneous	10	.41	7	70.00
Total	2468		1608	65.15

January, 1922, to October, 1925

TABLE IV

	Heart Murmur		Heart Enlarged		Heart Disease, etc.		Blood Pressure High		Blood Pressure Low		Pulse Irregular		Pulse Intermittent		Pulse Rapid		Pulse Slow	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Life	281	30.68	5	25.00	8	42.11	60	43.17	24	50.00	42	43.75	4	44.44	33	44.59	11	78.57
Life—Ltd. Pay.	112	12.23	1	5.00	2	10.53	11	7.91	5	10.42	14	14.58	—	——	7	9.46	1	7.14
Life—Modified	49	5.35	1	5.00	1	5.26	6	4.32	4	8.33	10	10.42	1	11.11	4	5.41	1	7.14
Endowments	341	37.23	12	60.00	1	5.26	39	28.06	9	18.75	18	18.75	1	11.11	18	24.32	—	——
Term—Restricted	104	11.35	—	——	2	10.53	13	9.35	2	4.17	3	3.13	—	——	2	2.70	1	7.14
Term—Unrestricted	29	3.17	1	5.00	5	26.32	10	7.19	4	8.33	9	9.38	3	33.33	10	13.51	—	——
Totals	916		20		19		139		48		96		9		74		14	
Total Amounts	$5,397,964		$121,000		$219,000		$1,011,410		$665,181		$605,705		$84,500		$578,500		$252,500	

	Goitre		Other Circulatory Impairments		Sugar		Other Urinary Impairments		Overweight		Underweight		Personal History		Miscellaneous		Totals	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Life	52	30.06	1	12.50	5	45.45	10	90.91	3	18.75	3	60.00	27	64.29	6	85.71	575	35.76
Life—Ltd. Pay.	12	6.94	1	12.50	4	36.36	—	——	5	31.25	1	20.00	3	7.14	—	——	179	11.13
Life—Modified	6	3.47	1	12.50	2	18.18	—	——	3	18.75	—	——	—	——	—	——	89	5.53
Endowments	74	42.77	3	37.50	—	——	1	9.09	3	18.75	1	20.00	10	23.81	—	——	531	33.02
Term—Restricted	19	10.98	2	25.00	—	——	—	——	2	12.50	—	——	—	——	—	——	150	9.33
Term—Unrestricted	10	5.78	—	——	—	——	—	——	—	——	—	——	2	4.76	1	14.29	84	5.22
Totals	173		8		11		11		16		5		42		7		1608	
Total Amounts	$889,741		$54,500		$131,000		$143,500		$149,500		$27,000		$483,584		$70,000		$10,884,585	

Dr. Whitney—Dr. Dwight, have you anything to add?

Dr. Dwight—I have nothing to say more than that Dr. Frost has expressed our opinion. I was not here, but I assume that he gave the very small experience we had, which was rather more interesting than impressive. We have confidence in the test, our executive officers are obtaining confidence, our agency forces are getting confidence.

I don't know whether Dr. Frost mentioned one factor which has to do with the percentage of these cases which we accepted. If he didn't, I just want to call attention to it, and that is the influence of having a test which we are willing to apply to cases which in the judgment of you gentlemen are distinctly bad. It has its advantages and disadvantages. We are not going out into the sub-standard business. I know we are laying ourselves open to criticism along that line. It is an argument that the Agents of your companies are using against the New England Mutual, but we have been criticized before and that doesn't worry us much. We have taken a very considerable number of cases which have been flatly declined or largely rated up, and in order that our experience may be as large as is practicable, and in order that we may obtain this information as soon as we may, we are very generous in the way in which we allow them to be examined, so that we are getting a whole lot of cases when Frost is traveling around the country that are really not worth considering. As I say, they are the cases that are either flatly declined or are rated up to such an extent that it amounts to almost the same thing. That point I want to make clear and I also want to make clear to you gentlemen that it is only in order that we may obtain as large an experience as is practicable within a short time that we are having these cases examined so frequently. We want to know all that we can know just as soon as we can know it.

Dr. Whitney—Has anyone any question he would like to ask?

Dr. Rogers—I have been extremely interested in the work that Dr. Dwight and Dr. Frost are doing. I believe they are working along the right lines and that there is a great future for a dependable test of the heart's efficiency. I have studied their technique and have had some correspondence with Dr. Frost and also with Dr. Dwight on the subject. I have been wanting to do work of a similar sort and have been hopeful that perhaps their experience would lead them to think that they might cut out some of the steps and accomplish the same result more rapidly. Is there any way of shortening this test so that we can all use it? Perhaps we shall all have to use it just as it is. I have an idea that if wind continues to blow in the direction that it is blowing, we will all of us ultimately have to do the same thing. In the meantime, will Dr. Dwight or Dr. Frost tell us if they have modified the original plan of their test or if in their opinion it is feasible to simplify it?

Dr. Dwight—We have had the same idea. There was a question as to whether this test was not altogether too long. There was a question also whether we could educate our examiners in order to make it possible for them to use it. I will tell you my opinion and then see what the fellow who really knows thinks about it.

Dr. Frost—So far as I am aware there are but three possible reasons for altering the technique of the test. In the first place, are there any steps that are so difficult for the examiner to do that it might be advisable to eliminate them? Yes; there are two, what we call Steps 3 and 5. In each of those steps we increase the pressure, in one case by having them exhale as far as possible, close the glottis and allow the diaphragm to relax, and in the second case through having them inhale against the gauge. There are only about

50 per cent of them that can do that naturally. Those are the only two steps that are really difficult to do.

The next possible reason for simplifying the test would be on account of the difficulty in learning it on the part of the examiners. Dr. Dwight has covered that very thoroughly and I can't add anything. I should say that approximately 70 of our examiners over the country are equipped to do this test. Some of them, particularly the more elderly men, have found it difficult to pick it up. If you watch them doing it, you will find that a good proportion of them find it difficult to take blood pressure. They were not brought up in the blood pressure era. They learned it from the literature and practice, or by going to a clinic and seeing it done. They didn't learn it as a part of their medical education. But all of those 70, with one or two exceptions, have been able to give us a satisfactory test.

The third possible reason for simplifying it would be a lack of value of any of the various steps. I think that is what Dr. Rogers has in mind. He, I believe, feels that the bulk of our information is obtained from the final three steps in which the subject blows through the spirometer, the blood pressure rises and the examiner determines the amount of rise. It is perfectly true that we get a great deal of our information, particularly as regards the strength or weakness of the cardio-vascular system, from those three steps. Upon the other hand, I should be very unwilling to do away with Steps 2 and 4. In each of those we increase the intrathoracic pressure and observe the amount of fall of the blood pressure. We are getting some very interesting results from those two steps. We have not had experience enough to know exactly what it means. I cited two cases to you here today in which we were unable by any amount of increased intrathoracic pressure to reduce the systolic pressure. We have found in a majority of those cases the clinical signs of an aortic regurgitation. We are still following up that track.

We want to know what it means. Furthermore, the base line which goes along with those steps is of very great assistance to us in determining the stability of the cardio-vascular system. In other words, does the blood pressure between the steps fluctuate up and down abnormally? For instance, in certain individuals, even if you are taking the blood pressure at your desk, you will note that when they take a breath, even when they talk, their blood pressure may jump 15 or 20 points. There, of course, you have an indication of cardio-vascular irritability. Steps 2, 3, 4 and 5 give us an indication of the exact amount of irritability which is inherent in any particular cardio-vascular system. Steps 3 and 5 probably are not necessary; 2 and 4 we should still wish to retain.

Dr. Whitney—The meeting will adjourn to an informal luncheon on the tenth floor. We will reconvene at 2:00 o'clock.

Afternoon Session.

Dr. Whitney—Our first paper this afternoon will be presented by Dr. Oscar H. Rogers and Arthur Hunter, on the Mortality Study of Impaired Lives.

MORTALITY STUDY OF IMPAIRED LIVES—NO. 4

(A)—Albuminuria
(B)—Glycosuria

By Dr. Oscar H. Rogers and Arthur Hunter

Chief Medical Director and Chief Actuary New York Life Insurance Co.

The first of the published experiences on the effect of albumin and sugar in the urine upon mortality was that of the combined companies in the Medico-Actuarial Mortality Investigation of 1914. This experience was based upon lives which had been accepted as standard risks, and chiefly represented cases in which "the presence of albumin was temporary and unimportant" or in which only one out of several specimens showed a trace of sugar. In 1915 Dr. J. B. Ogden presented the experience of the Metropolitan Life on groups which had undoubtedly been selected along similar lines as his study dealt with lives all of which had been accepted at regular rates of premium, some of them indeed in a super-standard class. The mortality in his experience was generally as favorable as that among the "ordinary" insured in the Metropolitan as a whole. It is fair to assume, with respect to both of these investigations, that the albuminuria or glycosuria was generally accidental because it was the custom at that time among life insurance companies to decline cases, unless the albumin or sugar was present only once in several specimens or unless there was only a history of such findings in the past. In the course of the discussion of Dr. Ogden's paper Dr. Patton made a suggestive contribution to our knowledge of the subject when he presented a record of five thousand rejected risks upon which the Prudential already had insurance in force and was, therefore, in position to trace their history. We shall have occasion later to quote from Dr. Patton's report.

In 1917 we presented a paper on "The Effect of Glycosuria and Albuminuria on Mortality" in which the experience of our own company was given for the issues of 1896 to 1915 inclusive carried to their anniversaries in 1916. This study was based upon policies issued on substandard plans by reason of the presence of albumin or of sugar in the urine at the time of their acceptance. With a view to determining to what extent the conclusions then reached should be modified by our broader experience we have made an examination of our material down to the anniversary of the policies in 1924 and have been able to make some differentiations which were formerly impracticable. Although no mortality table in existence furnishes an exact measure of the mortality experience of our company for the entire twenty-eight years covered by this study, we have made use of the "A. M." table as the nearest available approximation to it. Our general experience was higher than this table in the earlier years, but distinctly lower than it is in recent years. When interpreting our results some allowance should be made for this fact.

The cases included in the present study were insured on substandard plans on account of the single impairment, albuminuria, or glycosuria. All of this material was examined for casts, and cases in which they were found were excluded. Each case contains no other impairment of consequence and the groups are, therefore, medically homogeneous. During the early years the reports of the examiners in the field were generally accepted without any special home office control. For many years, however, our practice has been to secure additional specimens for examination at the home office, excepting in the larger centers, where the work of our examiners was more directly under home office supervision. In the case of albuminuria we have depended upon Heller's test, controlled, when in doubt, by the heat and acetic acid test. Usually there have been two, three and sometimes four or more examinations of the urine in a single case. Whenever,

in these several examinations the amounts of albumin have been different, we have taken the average of these findings.

With reference to the amount of albumin, we at first accepted, without question, the statements of the medical examiners. Later we used in our laboratory and in our instructions to the medical examiners definitions similar to those recommended to the Association in 1917. These were:

A faint trace is that amount which is only just clearly apparent.

A trace shows a white zone less than 1/16th of an inch in thickness and, from above, looks at most like a translucent zone.

A moderate amount appears as a white zone from 1/16th to 1/8th of an inch in thickness and, looked at from above, is opaque and flocculent.

A large amount shows a heavy white zone over 1/8th of an inch in thickness.

Very recently we have made rather wide use of Dr. Cook's Visual Guide to serve as a more accurate quantitative determination but very few of the cases so measured have entered into this study. It will be seen then that, with these crude methods, the distinction between the various amounts of albumin has not been very definite.

We have made a number of attempts to express in terms of the sulpho-salicylic test what we mean by a "faint trace," a "trace," a "moderate amount" and a "large amount" of albumin, but our results have been far from satisfactory. Through the courtesy of the Medical Directors of the John Hancock, the Metropolitan, the Equitable, the Prudential, the Travelers and the Mutual Life, we have had an opportunity to study the results of comparative tests made in their several Laboratories. The testimony of all of them is in substantial accord. It shows that the value of a "faint trace" ranges from .00 to .08; a "trace" from .01 to .35; a "moderate amount" from .08 to .80 and a "large amount" from .10 to

1.00. It will be seen from this statement how wide a range of albuminuria may be included under each one of these terms and how difficult it would be to say what amount of albumin is embraced in each of them. So nearly as we are able to draw inferences from the facts before us, we should say that our subdivisions represent approximately the following groups:

"Faint Trace," approximately less than .05%; average about .025%.

"Trace," approximately .05% and less than .10%; average .065%.

"Moderate Amount," approximately .10% and less than .25%; average about .13%.

"Large Amount," approximately .25% and up; average .35%.

To avoid misunderstanding, it may be mentioned that .01% means one part in 10,000.

In determining the classification of "accidental," "intermittent," and "constant" albuminuria, the following is the rule of the company:

"Accidental," if found in one of several tests.

"Intermittent," if found in two out of three or four tests.

"Constant" (or Persistent), if found in two out of two, three out of three, or three out of four tests; and, when more than a trace, if found in two out of three tests.

Trace of Albumin—Intermittent. We found so small a number of cases of "faint trace" that we combined them with the trace group. There were 11,775 of these. They were divided into two classes, intermittent and constant. The former developed the following facts:

TRACE OF ALBUMIN—INTERMITTENT—4084 CASES

Issues of 1896 to 1923 Carried to Anniversaries in 1924

	By Policies			By Amounts Insured		
Policy Years	Actual Deaths	Expected Deaths by A. M. Select Table	Ratio of Actual to Expected Deaths	Actual Death Losses	Expected Losses by A. M. Select Table	Ratio of Actual to Expected Death Losses
1-5	58	60.4	96%	$147,200	$165,210	89%
6-10	23	27.8	83	59,800	57,410	104
11 and over	24	19.1	126	24,400	34,400	71
Total	105	107.3	98%	$231,400	$257,020	90%
Ages at Issue						
15-24	29	28.8	101%	$ 57,000	$ 45,750	125%
25-39	38	48.6	78	88,600	110,510	80
40 and over	38	30.0	127	85,800	100,760	85
Total	105	107.3	98%	$231,400	$257,020	90%

Of the 105 deaths, 11 were due to Bright's disease.

It appears from this experience that traces of albumin, occurring intermittently, may generally be disregarded.

Trace of Albumin—Constant. There were 7,691 cases in which the trace of albumin was constant or persistent. A division of this material into two groups of years of issue was made, 1896 to 1906, and 1907 to 1923 inclusive, but so little difference was found in the relative mortality that all years of issue were combined in a single group with the following results:

TRACE OF ALBUMIN—CONSTANT—7,691 CASES

Issues of 1896 to 1923 Carried to the Anniversaries in 1924

	By Policies			By Amounts		
Policy Years	Actual Deaths	Expected Deaths by A. M. Select Table	Ratio of Actual to Expected Deaths	Actual Death Losses	Expected Losses by A. M. Select Table	Ratio of Actual to Expected Death Losses
1-5	186	115.3	161%	$441,800	$269,829	164%
6-10	102	59.3	172	212,900	116,579	183
11 and over	67	44.4	151	74,800	67,104	111
Total	355	219.0	162%	$729,500	$453,512	161%

Ages at Issue						
15-24	86	70.6	122%	$104,400	$ 95,692	109%
25-39	171	94.1	181	339,000	196,901	172
40 and over	98	54.3	181	286,100	160,919	178
Total	355	219.0	162%	$729,500	$453,512	161%

Of the 355 deaths, 88 or 25% were due to Bright's disease.

Especially noteworthy is the low mortality in the age group 15 to 24, which suggests that a constant trace of albumin found during adolescence is relatively unimportant. The mortality, except at the younger ages is distinctly high and shows that "constant" albuminuria, even in traces, is a matter of considerable importance after the adolescent period has passed.

Moderate Amount of Albumin—Constant. In this group, there were 1,342 cases. An analysis of them gave the following results:

MODERATE AMOUNT OF ALBUMIN—CONSTANT—1342 CASES

Issues of 1896 to 1923 Carried to Anniversaries in 1924

	By Policies			By Amounts Insured		
Policy Years	Actual Deaths	Expected Deaths by A. M. Select Table	Ratio of Actual to Expected Deaths	Actual Death Losses	Expected Losses by A. M. Select Table	Ratio of Actual to Expected Death Losses
1-5	44	18.2	242%	$86,400	$41,860	206%
6-10	17	8.5	200	23,200	15,460	150
11 and over	17	7.7	221	15,600	9,450	165
Total	78	34.4	227%	$125,200	$66,770	188%
Ages at Issue						
15-24	21	10.6	199%	$21,500	$15,380	140%
25-39	35	14.6	240	59,200	28,060	211
40 and over	22	9.2	239	44,500	23,330	191
Total	78	34.4	227%	$125,200	$66,770	188%

Of the 78 deaths, 23 (31%) were due to Bright's disease.

The mortality in the first age group, is somewhat less than at the later ages but not to the same extent as under a trace of albumin, constant. Although the amount of data is too

scanty to enable us to come to definite conclusions, it is possible that a moderate amount of albumin is of somewhat less significance at the young than at the middle and older ages.

Large Amount of Albumin. There were but 463 cases which showed a large amount of albumin, too small a number to be of value if analyzed in detail. A summary is as follows:

LARGE AMOUNT OF ALBUMIN—CONSTANT—463 CASES

Issues of 1896 to 1923 Carried to Anniversaries in 1924

By Policies			By Amounts Insured		
Actual Deaths	Expected Deaths by A. M. Select Table	Ratio of Actual to Expected Deaths	Actual Death Losses	Expected Losses by A. M. Select Table	Ratio of Actual to Expected Death Losses
42	13.0	323%	$84,100	$29,400	286%

There were 19 of the 42 deaths (45%) from Bright's disease.

It may be mentioned in connection with the foregoing synopsis that cases with 1% or more of albumin were probably declined.

A recapitulation of the results obtained in these four groups gives a better idea of the significance of albuminuria:

ALBUMINURIA

By Policies

	Actual Deaths	Expected Deaths by A. M. Select Table	Ratio of Actual to Expected Deaths	Percentage of Deaths from Bright's Disease
Intermittent—trace	105	107.3	98%	10%
Constant—trace	355	218.9	162	25
Constant—moderate	78	34.4	227	31
Constant—large	42	13.0	323	45

Dr. Patton's group of cases with albuminuria, 5,040 in number, showed a mortality of 244%, 63 expected and 154 actual deaths. It is probable that cases with intermittent albuminuria or with albuminuria in quite small amounts were

not declined by his Company and that this group represents about the same material as that contained in our "moderate" and "large amount" groups combined. At any rate, his results agree in a general way with those contained in our study, assuming that the facts were as are here suggested.

Glycosuria

As is probably the case with most Life Insurance Companies our practice in dealing with glycosuria has been one of evolution. We began by accepting the statement from the examiner in the field, not only as to the presence of sugar in the urine, but also as to its amount. At the present time, with the exception of a few large cities, we are examining the urine in all of these cases in our home office laboratory. After some experimentation of our own we have been depending upon Fehlings' solution with Benedict's solution occasionally, and the fermentation test infrequently, as controls. Through the kindness of Dr. Wolf of the Equitable Life we compared at one time a series of our own findings with the findings of his laboratory, and found that the differences were so slight that we have continued to employ this method. Making due allowance for the gradual change in practice, the quantities of sugar in our experience are represented approximately by the following subdivisions:

A trace of sugar—all quantities less than about one grain to the ounce.

A moderate amount—from one grain to about four grains to the ounce.

A considerable or large amount—more than four grains to the ounce.

The same definitions for "accidental," "intermittent" and "constant" or "persistent" apply to glycosuria as to albuminuria.

We have always followed the practice of requiring two or

more specimens of urine, but during the earlier years we did not inquire whether the applicant was under any dietetic restrictions, and it is only within the last few years that we have been using tests of sugar tolerance. For a considerable time, we depended upon the statements of the applicants themselves as to any restriction in diet. Now, we are applying a glucose test or a test meal in many of them. Our material, therefore, does not represent the same kind of selection for all years but is a composite picture.

The amount of material available for the study of sugar in the urine found on examination was too small to warrant subdivision by ages and by policy years. In the group, "Intermittent Glycosuria," 865 cases, we found the following:

TRACE OF SUGAR—INTERMITTENT—865 CASES

Issues of 1896 to 1923 Carried to Anniversaries in 1924

By Policies			By Amounts Insured		
Actual Deaths	Expected Deaths by A. M. Select Table	Ratio of Actual to Expected Deaths	Actual Death Losses	Expected Losses by A. M. Select Table	Ratio of Actual to Expected Death Losses
49	35.3	139%	$126,300	$86,200	147%

Among the 49 deaths there were 7 from diabetes.

Moderate Amount of Sugar—Intermittent. We had only 351 cases in which a moderate amount of sugar was found intermittently. The actual deaths were 17 and the expected 10.3%, a ratio of 165%. Even though the amount of the material is small, the result appears consistent with that obtained in the preceding group.

Trace of Sugar—Constant. Those in which a trace or a very small amount of "constant" sugar was found on examination—534 cases yielded the following results:

TRACE OF SUGAR—CONSTANT—534 CASES

Issues of 1896 to 1923 Carried to Anniversaries in 1924

By Policies			By Amounts Insured		
Actual Deaths	Expected Deaths by A. M. Select Table	Ratio of Actual to Expected Deaths	Actual Death Losses	Expected Losses by A. M. Select Table	Ratio of Actual to Expected Death Losses
49	24.8	198%	$106,200	$50,500	210%

There were 8 of the 49 deaths from diabetes.

Moderate Amount of Sugar—Constant. Cases in which there was a considerable amount of sugar (persistent) found on examination, were declined, but a group of "Moderate" cases, 483 in number, showed the following:

MODERATE AMOUNT OF SUGAR—CONSTANT—483 CASES

Issues of 1896 to 1923 Carried to Anniversaries in 1924

By Policies			By Amounts Insured		
Actual Deaths	Expected Deaths by A. M. Select Table	Ratio of Actual to Expected Deaths	Actual Death Losses	Expected Losses by A. M. Select Table	Ratio of Actual to Expected Death Losses
82	22.8	360%	$215,400	$49,390	436%

In the study by Dr. Patton to which reference has already been made, the relative mortality in a group ranging from a trace to a large amount of sugar was 173%—expected 23.6 and actual deaths 41.

The mortality in our four classes is consistent even though the material is scanty.

SUGAR IN URINE

	Ratio of Actual to Expected Deaths—by Policies
Intermittent—trace	139%
Intermittent—moderate amount	165%
Constant—trace	198%
Constant—moderate	360%

Our experience seems to prove that sugar in the urine is more serious than albumin.

The following table, showing the distribution by age of an equal number of cases treated as substandard risks for either albuminuria or glycosuria, may be of interest.

Distribution by Groups of Ages

Based on an Equal Number of Albuminuria and Glycosuria Cases

Ages at Issue	Albumin	Sugar
15-24	39%	9%
25-39	46	54
40-49	12	28
50 and over	3	9

This seems to confirm the general impression that albumin is relatively more frequent at the younger ages, and that sugar is relatively more frequent at the older ages. It seems hardly necessary to point out that albumin is found much oftener than sugar by the examiners of life insurance companies.

Conclusion

We conclude from the statistics now submitted that:—

(1) A trace of albumin in the urine occurring intermittently may be ignored if there is no history of albuminuria in the past.

(2) A persistent trace of albumin should not be ignored.

(3) A moderate amount of albumin found on several tests undoubtedly means a mortality distinctly higher than the normal, and a large amount of albumin constitutes a serious impairment.

(4) An intermittent trace of sugar should not be ignored in determining the value of a risk.

(5) A persistent trace of sugar is a serious impairment, and a moderate amount, persistent, renders a risk uninsurable except on plans which provide for a very high mortality.

Neither from this present study, nor from any that have preceded it, may we judge what the mortality is likely to be in cases which present an extended history of albumin or sugar in the past and which show no trace now. Often we see cases which, possessing such a history, have later been insured as standard risks, and still later the sugar or albumin has reappeared. It is to be hoped that some information bearing upon these perplexing cases may be accumulated in the future either through individual or collective effort. Unfortunately many companies do not keep a record of the minor impairments which are brought to light under standard risks, and to gather together such material would involve a very large amount of labor.

Dr. Whitney—Will Dr. Rogers kindly discuss the paper prepared by him and Mr. Hunter?

Dr. Rogers—This paper gives the experience of the New York Life Insurance Company with risks treated as substandard because they showed albumin or sugar in their urine. We have been obliged to express our results in terms of the standards which we used at the time the risks were accepted. In the case of albuminuria all of our determinations were made with the old Contact Test. In many cases the urine was placed in the tube first and the acid flowed down under it. In many the acid was placed in the tube first and the urine flowed down upon it. When we speak of a "trace" or "moderate amount" or "large amount" of albumin, we mean that uncertain quantity which, among fairly trained physicians, generally would be described in those terms as a result of the use of those tests.

Now, having before us the mortality results which had been secured through the use of this recognizedly crude method of determining the presence of albumin in the urine, the question at once arose whether we could possibly convert these results into terms of the modern quantitative test of albuminuria. We were anxious to accomplish this because we

recognize, as I think all of you do, that the sulpho-salicylic test is the last word in quantitative tests, that it is accurate and that it measures with very great exactness the amount of albumin present in the urine. It seemed to us that it would be most desirable to give in the paper a table of equivalents which would make it possible to express our experience in terms of this new and much more accurate standard. We did this, making use of the Visual Guide as a standard.

After we had done this, I was obliged to be away on a rather extended business trip and have only just returned to find that these attempts made to effect this very desirable conversion have been a subject of quite widespread interest and some justifiable criticism, and I wish that the Association would allow us to make such changes in our paper, when published, as will set forth more fully than is possible in this brief statement, the difficulties of the problem and place the results of our efforts in a more intelligible form, perhaps as an appendix to the paper itself.

Mr. Hunter—This is the second in a series of papers in which Dr. Rogers and I have endeavored to make greater differentiations in impairments than were heretofore possible. Until a sufficient amount of material has been developed the desired differentiation cannot be made, but unfortunately there is another difficulty—namely, the lack of information furnished by the medical examiner. In our new Impairment Code we are preparing for more scientific analyses than have been possible in the past, but we must wait several years before such material is available. In the meantime, we must deal with the facts as they are given to us by the medical examiner. In the case of albuminuria we had to accept, in the first place, either the statement of the medical examiner, or the opinion of the physician analyzing the specimen at the Home Office, as to whether there was a "faint trace," "a trace," "moderate" or "large amount." It was not necessary

for us to endeavor to convert these statements into a quantitative analysis, but we endeavored to do so in this paper and found that we were misled. Dr. Rogers and I are asking to be permitted to make some changes in the finished paper which will only affect the translation of a "faint trace," "a trace," etc., into a percentage of albumin.

Dr. Whitney—Will Dr. Patton kindly open the discussion?

Dr. Patton—The Association is again indebted to Mr. Hunter and Dr. Rogers for a report of the experience in their office of the effect of albuminuria and glycosuria upon their mortality per the groups as arranged or selected by them.

It has always seemed to me that much valuable time and material are wasted in the diverse methods followed by the various companies and their Actuarial, Medical and Statistical Departments. I realize that each office has developed its methods as its company's business has grown and it is very difficult for me to criticise or discuss data that has not been collected, classified or studied according to the training I have received or the ideas I have developed.

The authors of the paper have seen fit, as is their privilege, to criticise the report submitted by your Urinary Committee and adopted by this organization at its 1924 Annual Meeting, and the mortality results they give seem to justify their criticism. Let us consider the matter in a judicial way.

The Urinary Committee based its recommendations upon a sulpho-salicylic acid precipitant or test and these results are based upon the Heller nitric acid test. Has anyone present any doubt as to the comparative reliability of these tests when attempting to quantitate the amount of albumin present by the cloud or precipitation produced? If so, I would like to have him conduct with a reliably trained technician a series of comparative tests in any properly equipped laboratory, for I feel sure that after such work all doubts will be forever removed from his mind.

The Urinary Committee's recommendation was to disre-

gard for life insurance purposes up to 10 mgm. of albumin per 100 cc. of urine (.01%) and they did this because a number of thoroughly trained technicians in several different laboratories had stated that this amount was *less* than the lowest average limit for the Heller test to indicate the presence of any albumin at all. Thus they did not recommend disregarding any albumin that would be detected by properly trained chemists or technicians even if using the Heller test.

Their data includes their earlier cases with urinalyses made by their field examiners in many instances. Fortunately much of their later material has been checked either at their home office or by their more experienced examiners in the larger cities.

Our office formerly used the Heller test both in the field and in the Home Office, and I am on record in the past as in agreement with Dr. Rogers in the opinion that a urine specimen that was negative for albumin by a properly applied Heller test could safely be considered O K for life insurance.

We never felt that with this test we could divide the cases with any accuracy on a percentage basis as to the amount of albumin present, and since using the sulpho-salicylic acid test we have become convinced that some of our former ideas were erroneous.

The results I reported in 1915, as stated by the authors, were based upon a study of 5,000 rejections upon which we had issued previous insurance. These albumin rejections were based upon the Heller test and the cases covered from the faint trace to a large amount—for during most of the period prior to 1910 a faint trace of albumin led to rejection by us. I have attempted to bring our experience up to date on these cases, but their small number, with no additions for 15 years, was still further complicated by so many proportionate terminations besides those by death that the mortality experienced is not believed reliable enough to record.

Our office has been acting upon its albuminuria cases for

the last five years upon the basis of a sulpho-salicylic acid test and though that period of time is short, yet to date our selection is giving us satisfactory results. It will be some years before we will have sufficient data to make a study of the various groups based upon the percentage amounts of albumin recorded, but it is our intention to do this as early as we work out any worth while results. During 1924 we insured 5,384 cases either at Standard or at various substandard ratings with negative or Q findings, or with varying amounts of albumin present, and this is a sample year for us in this respect during the last five years.

A study of 10,270 cases we insured from 1902 to 1922, where we failed to find albumin and previous examinations had shown it to be present, gave us, for all ages, a mortality of 91% with the entry ages 35 to 39 showing 125% and 40 to 44 showing 130%.

We agree with the author's classification as Accidental, Intermittent and Constant.

The only effect I can see of the addition of their "Faint Trace" cases to their "Trace" group would be to improve the mortality of the combined group.

The results shown in the "Intermittent" group is favorable, as would be expected, and indicate that a good experience may be expected under entry age 40.

The "Constant" group of their "Trace" of albumin cases or those containing, as they claim, up to .02% (or 20 mgm. per 100 cc. of urine) will make those offices doing a substandard business scan their selection more closely if they still believe in the Heller test standard, but I firmly believe this group contains enough cases with more than .02% of albumin per a sulpho-salicylic acid test that these results should not enter into our consideration if using the latter test. I desire to repeat that I believe these results are valuable in life insurance selection, but only where the Heller nitric acid test is used as the standard.

We find a distinct increase in their mortality in the Constant over the Intermittent, especially above entry age 24, and a very light rating would have proven sufficient for them amongst the cases insured during the period of adolescence.

A combination of their "Constant trace" and "Moderate" groups (or .01 to .05%) gives a mortality of 171% per the A. M. table which must be translated into the M. A. table equivalent, which I think is used by most companies in computing the mortality they plan to cover with their rating, and this would reduce the mortality at entry ages under 45.

They found a heavier mortality as the intensity of the albumin reaction increased and this has always been the result we have expected, and those of us rating cases have planned accordingly.

While we agree with the authors in this respect, we must repeat that in our judgment the basic test for their classification is irregularly inaccurate. This opinion is founded upon 18 years' close association with one of the best teachers of urinalysis this country has ever known, of over 30 years' experience in life insurance examinations and upon a long and large series of comparative tests made in the Prudential laboratory.

It would be interesting to know whether the New York Life has conducted any comparative tests in their home office laboratory to determine the relative agreement of their Heller test percentage with those of a sulpho-salicylic acid test.

The practices of most offices concerning tests for glycosuria have agreed quite thoroughly and efforts at quantitation have not been made much differently from those indicated in this paper until the last few years, and that in only a few home office laboratories. The use of test meals, blood sugar determinations, etc., is of too recent a date to be of material statistical value as yet, and we must fall back upon the clinician for the basis of consideration in many instances. The ques-

tions of diet, medicinal or other forms of treatment are handled in a varied manner by different companies.

Their "Intermittent" glycosuria cases in both "trace" and "moderate" amount groups gave, as was to be expected, mortalities that call for substandard classification and as a general rule their mortality is heavier than for the albuminuria cases. The office that takes many of these glycosuria cases at Standard rates must be prepared for a high death rate in the group and more than a "constant" trace of glucose gives a mortality that is prohibitive for insurance.

I know of no problem that is as difficult for a medical director today as an attempt to decide a doubtful glycosuria case with due equity to his company and the applicant. Is such a case a true diabetic or not?

During 1924 we approved at regular or substandard rates 1,701 cases with either Q'd findings for previous records or with varying amounts of glucose present up to .5% and as for albumin this is a sample of the last few years upon which we are building our experience.

We agree thoroughly with the conclusions drawn by the authors except that based upon a persistent trace of albumin and there our disagreement is dependent upon a difference in our methods of determining the limits of the group.

Should a number of companies continue the methods adopted by the Association for albuminuria in 1924, we should accumulate enough material in a few years for a study to point the way more definitely for us and in a few years more to confirm one way or the other the wisdom and safety of such a plan of selection.

Dr. Whitney—Dr. Bradshaw of the Mutual Life will continue the discussion.

Dr. Bradshaw—Mr. President and Gentlemen: These mortality studies presented by Dr. Rogers and Mr. Hunter

from time to time are accomplishing certain excellent results both for us as insurance physicians and for the medical profession in general.

ALBUMINURIA—This present study of albuminuria and glycosuria is an excellent example of this accomplishment, in that it not only clearly and definitely shows the mortality of these impairments but also it has standardized an accurate classification and one easily comprehensible.

Our Company has been using Benedict's and Folin's test to determine the actual amount of albumin present for less than one year, so we have been unable to make a statistical study to present in comparison. It is, therefore, comforting to us to know that in the group showing a faint trace or a trace of albumin intermittently, the mortality ratio is relatively low and as the authors state, this condition "may generally be disregarded."

This apparently is the only group that can be studied with a view of granting insurance to them at standard rates. In all the other classes and groups the ratio of mortality is so high that they are definitely substandard or uninsurable. There is no middle ground for exceptions.

This study also agrees with our clinical knowledge of albuminuria. It is, of course, well known that there is a fairly large group of the so-called non-nephritic albuminuria cases, including such conditions as "physiologic," "transient," "functional," "adolescent," "intermittent" and the "albuminuria of pregnancy." With observation and study this group is fairly easy of detection. After reading this paper, I am more and more convinced that the difference between physiologic and pathologic albuminuria is quantitative, not qualitative, and that the term "albuminuria" implies that serum albumin is present in the urine in such quantities that it can be easily detected by a not too delicate test accepted as standard.

GLYCOSURIA—This is very little to add to this study. The results are striking and conclusive. In my own Company we made a study of intermittent glycosuria in 1924 of the issues 1907 to 1919—exposed to 1920, and our findings were very similar. Our greatest mortality was found to be in ages 45 and over and in policy years six and over. We had 76 deaths of which 4 deaths or 5% of the total were from diabetes. In the general experience of our Company for the same issues the deaths from diabetes were 1.1%.

I wish particularly to call your attention to the causes of death in this group showing intermittent glycosuria in those cases terminated by death. In our own study it was very interesting and striking to note the prominence and predominence of such conditions as apoplexy, diseases of the heart, angina pectoris and the acute infections.

I believe that one of the most important and significant statements in this excellent report of Dr. Rogers and Mr. Hunter is the fourth paragraph of their conclusions. It is a statement that those of us employed in the selection of risks should keep in the conscious regions of our minds and not let it slip into our unconscious—that paragraph reads as follows: "An intermittent trace of sugar should not be ignored in determining the value of a risk."

Dr. Whitney—Dr. Exton has a few remarks to make on the discussion of this paper.

Dr. Exton—Mr. President and Gentlemen: Dr. Rogers' papers are always stimulating, and I wish there was time to discuss several points. What has interested me most, however, is what Dr. Rogers says about the quantitative albumin tests. Being the first to propose and develop such tests, for insurance laboratories' use, the Prudential experience is, of course, longer than that of any other laboratory, and it shows unmistakably that the one and only tool with which improvement in albuminuria selection will be made is the quantitative test.

As to the tests being practical, I can only say from our own and the experience of many of the best men and laboratories in the country who use the sulpho-salicylic acid tests reported by the Committee, that they are practical. The proportions of reagent and urine have become more definitely established, but of course the greatest gain in practicability has come by providing permanent standards instead of preparing fresh ones. These facts are given merely to emphasize that it matters little which albumin test you use provided that it be a quantitative test.

Now just a word about glass standard tubes, because some, and I think Dr. Rogers is among them, believe they are necessary to make the quantitative tests practical. I have tried ten years to to get them and without success, but have learned that if they can be had, the cost will be prohibitive. It has been found possible in our laboratory to make solid tubes of a plastic which is just as permanent and which has every other advantage of glass and they are easy to reproduce and cost very little. They are not made of gelatin and we will gladly tell anyone how to make them, but will not undertake to supply them. The Prudential laboratory may discard standard tubes altogether.

They are no longer necessary now that we have an inexpensive and simple "junior" scopometer. With this, one has only to put the test in the instrument and read the amount of albumin on the scale. There is nothing mechanical to get out of order and it tells every gradation instead of guessing between tubes. I designed this instrument over eight years ago, but had to abandon it because satisfactory turbid wedges could not be found for it. Lately, Dr. P. V. Wells, working with the scopometer in the Prudential laboratory, hit upon a very satisfactory and ingenious way of making cloudy wedges by suspending fine white particles in celluloid. The tubes which I spoke of as being as satisfactory as glass can be made in this way and are solid casts of celluloid.

To use the wedge or junior scopometer, as I will call it, one places the albumin test in it and looks at a light which is seen as a bright line running across a round white field. This is produced with a special target giving a dark field effect. One then shifts the wedge to a point at which its thickness causes the bright line to disappear and that thickness is read on the scale directly in terms of milligrams of protein per 100 c. c. That is all there is to it. You can use the heat test or any reagent you want with it. I offer it in the hope that it will enable all to join in putting albumin determinations upon a quantitative basis, because anyone but a blind person can use it and anything simpler or more practical is inconceivable.

Dr. Whitney—Dr. Clark have you a few words to add to the discussion?

Dr. Clark—We have made a second table comparing our reports on albumin by the quantitative sulpho-salicylic acid and the Heller's ring tests. This table is based on the reports of 5,932 specimens examined in our laboratory during six months (February to July, 1925, inclusive).

Quantitative Test		Estimation of Same Specimens by Hellers				
Quantity % Albumin	Number of Specimens	Negative	X	XX	XXX	XXXX
Negative	5,224	5,216	6	2		
.005%	222	100	78	43	1	
.01%	171	7	9	144	11	
.02%	104	1	1	44	55	3
.03%	64			9	54	1
.04% and .05%	61				40	21
.06% and .075%	30				19	11
.1% and over	56				11	45
Total	5,932	5,324	94	242	191	81

Dr. Rogers regards a faint trace as an amount of albumin less than .01%. This agrees in a general way with our find-

ing, since of 94 specimens designated as X albumin with the Heller's test, 78 were found to contain .005% albumin by the sulpho-salicylic acid test. A faint trace Dr. Rogers states is .01%. That also agrees with our findings as of 242 specimens marked XX by the nitric acid test, 144 were reported as containing .01%. A moderate amount Dr. Rogers finds is an amount equal to .02% and up to but not including .05%. Our table would indicate that this might be extended to include amounts equal to .02% and up to .075%. A large amount could be regarded as .1% or more. This table is based upon the urinary reports made in our Home Office laboratory by a physician who has had thirty or more years' experience with the Heller's test.

It is apparent that the New York Life and the Mutual Benefit agree fairly well as to the quantitative significance of the various terms—faint trace, trace, moderate amount, and large amount. However, when we compare the quantitative amounts in any one group as reported by the Heller's test, there is no great uniformity in the quantitative findings. For example, in the 191 specimens reported as XXX by Heller's test, the actual amounts of albumin present ranged from .005% to .1% and over. This illustrates well the statement of Dr. Knight and others that the nitric acid test cannot be considered a quantitative test.

The second question suggested by the paper of Dr. Rogers and Mr. Hunter is how much albumin may be ignored. Some companies ignore amounts below .03%, others below .02%, and still others below .01%. It is our belief that our underwriting department should be given the advantage of a laboratory finding when the amount of albumin is only .005%. In order to ascertain the value of the .005% standard, we made two investigations. We first analyzed the microscopical reports in the various groups and the following table is self-explanatory:

% Albumin	Total Specimens	Specimens with Casts, Blood or Pus	% Specimens with Casts, Blood or Pus
Negative	5,374	89	1.6%
.005	222	35	15.7%
.01	171	42	24.6%
.02	104	27	25.9%
.03 to .05	125	32	25.6%
.075 or more	86	24	27.9%

It will be noted that a surprisingly large percentage of our .005% specimens gave microscopical evidence of pathology (casts, blood, or pus). Our rule is to disregard a report of .005% albumin if the case is otherwise unimpaired, but we believe that a finding of .005% albumin with casts, pus, or blood, should lead to further study of the case.

In the second study, we analyzed the applications to which these reports were attached, with the result indicated in the following table:

Free from impairment or adverse history	34.3%
Previous or present finding of albumin with or without other impairments	44.5%
Evidence of cardiovascular disease	9.5%
History of calculus, or disease of prostate or bladder	5.5%
Miscellaneous impairments or histories	6.2%
	100. %

Approximately 60% of these cases showed other evidence of a present or previous pathological condition of the genito-urinary tract or cardio-vascular system.

Dr. Rogers and Mr. Hunter have given us additional and very important evidence as to the necessity of grouping our cases under the headings of constant and intermittent albuminuria. Is it not important to have before us reports of .005% albumin while making this distinction?

Dr. Whitney—Has anyone anything to add in the way of discussion? * * * Will Dr. Rogers kindly close the discussion then?

Dr. Rogers—I am very glad, indeed, to have been the cause of this discussion. I am glad that it hasn't been acrimonious. What I was striving to suggest is this: Here we

have submitted the experience of the New York Life Insurance Company and taken in what we think was a fair and just way, a pretty large group of albuminuria cases. We recognize that there is no quarrel about the yard stick. We recognize that our yard stick has been a very inefficient one. I am only sorry that we have not been able to give you this same material in scientific terms. As I said at the beginning, all that we intended to do when we submitted this in the form in which we submitted it was to lay before you the problem of how much albumin did we actually have to deal with in terms of modern standards, and if you can answer that question, then the material that we have submitted here must be of real value in your future medical selections. I endeavored to express those findings in terms of percentages. I may have been five times wrong or ten times wrong. That is for these experts who have discussed it and who may hereafter discuss it to determine. After they have determined what that is in terms of the yard stick that we all hope some day to use, after they have determined that, I believe that the material that Mr. Hunter and I have laid before you will prove of some value in life insurance.

I was very much struck, indeed, with that mechanical device of Dr. Exton's. It appeals to me as something that the doctors in the outlying districts can use and give us in terms of a scientific yard stick that Messrs. Folin and Benedict have given us, I am sure in the long run, to the lasting benefit of life insurance.

Dr. Whitney—I have great pleasure in introducing to you Dr. John F. Erdmann who will read a paper on "Acute Diverticulitis of the Colon."

Dr. Erdmann—It is a very great pleasure to be able to meet you this afternoon, and before proceeding with my paper, I want to thank your President and also Dr. Rogers for the help that they have extended to me in attempting,

and also in collaborating with me, on a paper on gall bladder disease which has proved a dud owing to the fact that after searching and following up the data (Dr. Rogers was kind enough to put the entire force of the New York Life Insurance Company at our disposal), we had to concede the fact that people in New York cannot be followed whether they are alive or dead. So we gave up the subject of gall bladder and I am now going to present a paper to you on the subject of diverticulitis of the colon. I really think from the standpoint of its merit from an insurance standpoint it is of more value at the present time than a paper on gall bladder would have been.

ACUTE DIVERTICULITIS OF THE COLON

Dr. John F. Erdmann.

Left lower quadrant pain with nausea or vomiting in the male predicates diverticulitis of the sigmoid, while in the female, in whom this disease is of relative infrequency compared to the male, the same situation of pain may mean one of numbers of diseases.

In 1919 I presented a record of twenty-seven patients operated upon for acute diverticulitis and today record twenty-five more, making fifty-two operated upon, of which forty-two were males and ten were females. Carnial stated that there are two to three males to every female. Of these, two had multiple attacks, one had had two distinct perforations each of which he was operated upon in a period of thirteen or more years and the other had had two attacks, each being operated upon in a period of less than three years. The gangrenous perforations in each patient were in demonstrably different areas.

Attention was called to the possibilities of repeated attacks in a paper read by me before the Buffalo Academy of Medi-

cine, Surgical Section, on January 8, 1918, and published in the New York Medical Journal for June 7, 1919. My associate, Dr. Thomas Russell, also has had a second perforation in one of his patients also remote from the site of the first attack.

These succeeding gangrenous attacks will of necessity call for a very guarded prognosis as to the future. Prompted by the number of patients I have seen and operated upon for the acute condition, I feel no need of apologizing for again reviewing the literature as to causation and expressing my individual views derived from clinical observations.

Causation: Much has been said as to the origin or cause of these protrusions. In searching for a reasonable cause for diverticulitis of the intestine, I am led to cite Dr. Edwin Beer's excellent paper in the American Journal of the Medical Sciences, 1904, entitled, "Some Pathological and Clinical Aspects of Acquired Diverticulitis of the Intestines." This paper stands out as one of the best expositions as to cause, etc., of this disease. It is furthermore remarkable with what foresight Beer at that time announced his hypotheses as to the terminations. Among the contributors to the pathology, causation, etc., may be cited Graeser, Sudski, Klebs, Hartwell and Cecil.

Graeser assigns the cause of the formation of diverticula to hernial protrusions which follow the emerging veins after taking a wandering course through the intestinal walls, finally reaching the serosa. These conclusions were based upon twenty-eight cases from which he made over one thousand sections.

Sudsky made a series of observations, contending that those of Graeser were at fault, being chiefly accidental.

Klebs noted that the protrusions occurred in close relation to points of exit and entry of the blood vessels in the intestine along the mesenteric attachment, and offered a series of arguments for these protrusions, chief among them being

that the intestinal wall is weakest at the mesenteric attachment.

I am satisfied that the argument of Klebs is fallacious as in my series of patients operated upon and those patients in whom these protrusions are found, inactive, while operating for other causes, the most frequent site is that of the convex and lateral aspects of the colon chiefly in the fat lobules or epiploons and rarely found in the mesenteric folds. Further, Klebs' view of mesenteric traction acting as a tendency to weaken the wall, thereby being a productive factor, appears to me to bear little weight. Old age as a factor is disproven by Ashurst's patient, a boy of seven, two cases of Hartwell and Cecil of seven and ten years, one of my own, a boy under seven years and numbers of the patients used as material for this article, under forty. Ransahoff Annal Surgery, 1913, reports occurrences in two children and called them perforating sigmoiditis and perisigmoiditis.

Finally, Hartwell and Cecil in summing up the etiology of this disease, after considering the various theories and arguments, apparently were forced to make the following statement: "We therefore are driven to the conclusion that up to the present time no complete explanation of the primary cause of intestinal diverticula has been offered. The most that can be said is that for some cause, a weakness exists in the intestinal coats, and that by reason of the weakness a pouching of the coats takes place when undue pressure arrives." I am inclined, from my clinical experience and from X-ray observation, to the conclusion that they are of congenital origin.

Reference to the literature and my own observation produces sufficient evidence of the fact that the entire alimentary tract from the oesophagus to and through the rectum is liable to diverticula. During the past four years, I have operated upon two patients with duodenal diverticula, one

gastric, two or three of the gall bladder and several of the appendix; one of the appendix in a child under seven years of age. Also several instances have been observed, during various abdominal operations, of diverticula scattered through the lesser intestine.

In the patients with acute manifestations, one finds some food or faecal content in the pouch involved, leading one to believe that these foreign bodies act in the same productive manner as the foreign bodies do that are found in the appendix.

Diverticulosis today is a well established disease, at least Roentgenologically if not symptomatically or clinically, and requires but the onset of pathologic process of one or more of the protrusions to become a definite clinical entity.

Classification: While various classifications as to false and true, acquired and congenital have been in vogue, that of true in which all coats of the intestines are present and the false when one and usually two coats are absent, are the most popular and desirable for a working basis.

Pathology: The pathological conditions found may be the same varieties as we have types of appendicitis; from a simple catarrhal, better called acute, to the types of exudative and occlusive changes and of ulcerative to gangrenous and perforative evidence. These may or may not all be accompanied by or rather followed with exudative to true abscess formations and finally the acute processes may recur or never resolve and a malignant change eventually may arise. These malignancies are reported frequently enough to give some weight to the possibility of an implantation of malignancy upon a former simple inflammatory growth. Nevertheless, in my series of patients with this disease while I have found malignancy in four or five of this series, I cannot feel but that the malignancy is not a result of but a coincident condition, reserving the thought that a malignant

implantation at the site of a prolonged irritation is always possible.

In many of these patients we have a low grade of infection proceeding finally to a marked thickening and new growth that will resemble malignancy first in its symptomatology as to partial or complete obstructions and by X-ray be so confusing at times to demand exploration for a positive diagnosis by the microscope. One of the most frequent complications in the acute types is abscess formation with adhesions to a hollow viscus and perforation. This occurs most frequently in the bladder. I have seen this complication in five patients in my operative series and in one patient not only was the bladder perforated, but a contact portion of the sigmoid was perforated and two perforations of the ileum also were present.

Recently I saw a patient on the eleventh or twelfth day of his disease with a one-half inch perforation into the posterior wall of the bladder, passing a most foul faecal mixed urine. On exposure by operation on the fourteenth day of his disease, two perforations in the sigmoid were in contact with the bladder perforation.

On two occasions I have seen high perforations in the rectum producing ischio-rectal abscesses, the origin of which in each, I feel satisfied, was from a gangrenous diverticulitis, both having a history of sudden onset of pain, etc, etc., with the subsequent formation of the abscess.

That nonoperative recovery takes place in patients at times cannot be disputed any more so than in patients with appendicitis definitely evidenced by symptoms but who also make the positive nonoperative recovery. During the past three weeks, I removed ten inches of the sigmoid in a male fifty-four years of age, whom I saw three years before in an acute but subsiding attack and who has been seen at various times during these three years by his family physician for mild attacks, his fourth attack—requiring opera-

tion—was followed by a large mass formation in the left lower quadrant, encroaching upon his hypogastric zone and upon exposure, not only was a marked amount of thickening and obstruction evident, but three large pockets of foul pus were evacuated.

Symptomatology: Formerly we were led to believe that we had an appendicular attack in the left side due to the terminal portion of the appendix extending across to the left or that there was a transposition of the appendix with infection, while these cases—particularly the former type—do occur, we for years are able to definitely diagnosticate, etc., these involvements as diverticula in the greater number of instances.

The symptoms and signs are allied to the various types of appendicitis, such as the fulminating, where pain in the left lower quadrant rapidly spreads over the abdomen, the pulse and temperature keeping pace with the invasion, abscess formation as in appendicular abscess, definite pain on pressure and finally mass or tumor formation. Eventually, if not operated upon, the following terminations are in order, resolution, rare; perforation into a surrounding viscus, the bladder most frequently, ischio-rectal abscess and in the event of nonresolution or nonoperative interferent thickening of the gut wall and surrounding fat takes place so that obstruction of varying degree results.

In the fulminating type, it may be that one must hide himself in the diagnosis of "an acute abdomen" and explore. The diagnosis, as before stated in women, is difficult at times, owing to the presence of the tube and ovary and many diseases of these two structures are very much allied in their symptomatology to acute diverticulitis.

In the subacute variety, one often has a state of subsidence to favor the X-ray diagnostician in helping us out. While in the very low grade type with marked infiltration, the patient presents the occasional evidence of obstruction in

mild or incomplete form and no evidence of blood or mucous as in carcinoma; while with proctoscope up to its length, one can eliminate carcinoma at least those patients in whom carcinoma starts in the mucosa, recognizing the fact that a very minimal number of cancers of the sigmoid or colon ever arise outside of the mucosa. I have no recollection of ever seeing the mucosa of the colon involved in a case of diverticulitis. The opposite obtains in malignancy. Proctoscopically, I can conceive of no more difficult bit of work than that of seeing the openings of the majority of these conditions, yet can conceive of the accidental exposure of a relatively small opening and the opening in a large diverticulum in which the mouth is also large.

Diagnosis: In making a diagnosis of this condition, the general aspect, age, etc., of the patients is to be considered. We find the majority of these patients are short, stocky beings, well nourished and of the overweight makeup, usually in the fourth or fifth decade and giving a history of some dietary indiscretion as is also so often noted in taking a careful history of appendicitis. The youngest of my patients was under seven and the oldest eighty-one, both male, while the majority were forty to forty-eight years of age.

The onset symptoms are pain in the abdomen, more definitely located, early in the left lower quadrant than the localization in appendicitis. There is nausea or vomiting, temperature and pulse rapidly ascending in the scale with the concomitant tenderness on pressure in the left lower quadrant varying from the usual iliac fossae area to the mid-hypogastric zone. The blood examination gives the typical picture of an acute infection. Rectal evidence will vary as to the site of the involvment, if high up in the sigmoid, little or none, while if in the lower segment of the colon, ample evidence by the finger is detected, being chiefly pain the first few hours and then a mass. Again if the area involved be in the mid-sigmoid area, sufficient mobility being

present, one may get the evidence by combined rectal and suprapubic pressure.

The greatest difficulty in making a positive diagnosis prevails in cases of perforated malignancies as in these patients, owing to the perforation, we have an absorption or infection temperature and a tumor or mass in both the malignancy and the infection cases. A carefully taken history will often bring to light in the carcinoma patient, evidence of occasional pain, colic, constipation, loss in weight, blood or mucous in stool, etc., and may show by blood examination, a distinct secondary anemia. When possible to use without danger to the patient, the X-ray will frequently be a great aid, bearing in mind the possibilities of both diseases being simultaneously present.

Gross Pathology: Upon opening the abdomen, the picture of the intensity of the process varies, noninflamed diverticula are seen protruding from all or rather any surface of the gut. They are bleb like, resistant to the sense of touch, and may or may not present evidence of foreign body content.

The acutely inflamed variety, varies from a markedly injected diverticulum or epiploon to one distinctly gangrenous. In the majority of patients operated upon by me, one or more of the epiploons were found involved. These tabs of fat, epiploons, were either extremely hard and intensely injected or in varying stages from hemorrhaic to gangrenous involvement. On section of the epiploon near its base or at the base, a diverticulum is usually found. These bodies or pouches are round or oval and range from the size of a small seed to that of an olive, usually about the size of a pea.

The resected colon when opened, presents the appearance of a healthy mucous membrance thrown into folds and here and there a crypt or long opening into which probes of varying size may be introduced, some openings readily admitting a pea, etc. In various ones of these pouches, round foreign

bodies are present which prove to be faecal concretions. The wall of the colon in chronic cases is thickened, the lumen is diminished and the intestine quite frequently densely bound to adjacent structures.

McGrath has shown that the majority of the diverticula are of the false variety and that the mucosa is pushed through the muscularis in the region of the penetration of vessels. In sharp contrast to this picture is that of the colon on section in cases of malignancy. The mucous membrane is destroyed, a deeply excavated area in the intestinal wall exists with hardening of the tissue about it and the lumen irregularly compressed by the growth if not completely annular and if annular the opening is diminished, as the growth increases, very simularly to the closing of the diaphragm in a camera. The intestine contains a sloughing foul smelling, bloody material. In the cases (diverticulitis) reported, two were of the cecum, one in the vicinity of the ileo-cecal valve and one at the beginning of the ascending colon.

I will again call attention to the statement and fact that operation does not predicate a clean bill of health from the disease as in one instance over fifty diverticula were demonstrated by me in five inches of a section of sigmoid removed for cancer, while in all the other patients in whom careful search was made numbers of diverticula were found not involved by inflammation, etc. Two of my patients previously recorded, having definite attacks and being operated upon the second time are also non-deniable evidence of the possibilities of repeated attacks of this disease. A guarded prognosis as to recurrence is naturally necessary. These two make a four per cent record of repeated invasions in my series. Some of the earlier reports of long cures of cancer by resection must be taken less seriously at the present time and considered as diverticulitis cases. I can plead guilty to reporting one such patient, a female operated upon by me sixteen years ago, 1909, for obstruc-

tion supposedly due to carcinoma. The entire pelvis was filled with a hard nodular mass, no temperature and a complete obstruction existed. A sigmoidostomy was done. In the course of two years all movements were by the rectum except slight leakage through the now contracted sigmoid anus. This patient is reported well and hearty as late as March, 1925.

Prognosis: In the acute cases with early operation is good while in the chronic with resection is equal to that of all ordinary large intestinal surgery of relative intensity.

Treatment: The acute abdomen presents but one solution to me in all patients where no cardiac or renal contra-indication exists, and that is early operation. One should no more wait for resolution, etc., in an abdomen of the acute variety in this disease than in an allied condition due to appendicitis, pus tubes, etc.

The habit that some operators fall into of waiting and iceboxing their patients in the acute abdominal cases may bring about the occasional good result but most frequently the results show the evidence of pernicious or ignorant delay or evidences of poor observation. Personally I have never seen the bad results reported in not delaying operation for the acute pus tube any more than I have for the acute appendix cases or in ruptured tubal pregnancies, etc., and heartily condemn delay and applaud early action of the surgical variety. Where one has the chronic type to contend with, no hurry is demanded as these cases rarely become positively obstructed but often become partial. Here over activity may be subjugated to treatment, dietary, etc., and it has been shown instead of a resection at times, an artificial anus proximal to the obstruction will work wonders in allowing absorption, etc., to take place in the thickened portion, so that eventually the channel has almost reached normalcy, whereas, in other instances, resection of a portion will be necessary. This is frequently best done and

with the lowest mortality of all operations by the Mickulicz procedure.

End to end suture has a greater life hazard than the former operation while the side to side anastamosis type of operation is practical only in certain cases.

To return to the acute cases, we have several types to consider in the early acute. Those before mass formation, attempts at repair of the perforation are in order and meet with great success. In the acute where abscess exists, liberal drainage and attempts at repair when feasible, otherwise liberal drainage only.

A fair proportion of these two varieties of cases after operation may and will present a fistula for a few weeks to months. The fistula is invariably a small caliber one and is easily taken care of and need cause no alarm as healing is the rule. Several of my patients have gone about from a few weeks, one to four years, eventually all healed. During this time, *i. e.*, between the establishment and cure of the fistula, only an occasional visit to the surgeon, to attend to granulations, is necessary.

In the acute variety that exist between the plates of the peritoneum in the mesentery, it has been my custom for several years to split the peritoneum on both sides parallel to the vessels so that freer drain will occur from the fat mesentery, so that less of that most vicious of all, a retroperitoneal lymphatic absorption, is diminished.

Summary: Diverticulitis, a disease of the left lower quadrant usually, but may be anywhere in the length of the colon.

Occurs chiefly in males between forty and fifty years of age, but children are reported also.

The patients are usually of the well developed makeup, short, fat and overweight.

About one female to four or five males.

All acute cases should be operated upon although known

that subsidence and cures of attacks occasionally take place as in other infective processes.

All chronic cases may be observed until obstructive symptoms show.

Diverticulosis—The condition of diverticula being present in the intestine merits no greater attention than the presence of the appendix or gall bladder does except that there are multiple diverticula and only one each of the appendix and gall bladder, therefore ordinarily the chance of acute diverticulitis should be greater but the clinical evidence shows that this disease is far more rare today than that of the gall bladder or the appendix.

Dr. Whitney—Gentlemen: I am going to impose upon another one of my good friends. Dr. Lowsley will give us a little talk illustrated with a few lantern slides.

Dr. Lowsley—Mr. Chairman and Gentlemen: The thing that makes a good urologic surgeon is the fact that he has in his possession instruments of precision and knows how to use them. In view of the fact that our speciality is made by the use of special instruments of precision, we naturally grasp the new instruments that are devised and attempt to devise new ones ourselves in the hope of furthering our diagnostic methods.

The first instrument that I would like to show you is a child of our clinic, devised by Dr. Butterfield of our staff. This instrument is size 15 1/2 and one may irrigate through it. May be passed into the urethra of any baby of either sex. At first glance that doesn't look to be very much, but when I tell you that formerly when we had a boy baby with pus in the urine and that had such pain that something had to be done, it was necessary for us to do an external urethrotomy in order to make the examination. With this instrument one may catheterize any baby of either sex and of any age. I have personally catheterized a boy 9 months of age who, by the way, had a stone in his left kidney, three stones in his left

ureter and three stones in the bladder at that tender age. This instrument that I have here is my own invention made possible by the McCarthy telescope. By means of this instrument, we may visualize tumors of the bladder even though they be bleeding, by irrigating through the jaws of the instrument and also one may take a very sizeable piece of the tumor out for diagnostic purposes. It may be used also for crushing small stones. In fact I had recently two stones which came to the orifice of the ureter and there hung and I was able by making use of the jaws of this instrument to grasp those stones so that the patient was immediately relieved.

Here is an instrument of considerable importance to us. It is one that I picked up in Berlin just a few weeks ago. By means of a double filament lamp, we get a tremendous illumination of the bladder, and are able to take actual photographs of it.

This is a very valuable instrument to us in keeping records of our findings. By means of this cold stage, Professor Cristellor of Virchow's Kraukenhaus was able to produce in an hour or so a section of a complete organ. By gradually freezing the kidney he can with an ordinary microtome razor cut a section as thin as 25 micromillimeters and you can search that kidney right through the same day the operation is made. It is of great value to us because formerly we used to take three or four weeks to imbed an organ of that sort in celloidin.

We have picked up a few European chemicals. If any of you are interested in them, I will be glad to show them to you later.

One of our greatest aids in arriving at diagnosis is pyelography. This has been improved upon recently in France by pyeloscopie, which is simply taking an ordinary fluoroscope with which you have been viewing the stomach and inject iodide into the kidney pelvis, but this screen, which is composed of lead strips with wood between in such a way as to absorb the secondary rays to make the picture clearer,

one may film the kidney pelvis under the eye and see the exact type of lesion which is present, see what the kidney pelvis contains and see the bladder. It is somewhat on the principle of the Bucky diaphagm.

I wish to tell you of one of the interesting things we have been doing lately which may be of interest to you is that in the follow up clinic in Dr. Eugene Pool's service in the New York Hospital, he has found that there is a large series of cases suffering from appendicitis who are not cured by the appendectomy. We took up this question with him and decided to investigate all of these cases (urologically) to determine whether there has been anything in the ureter which would cause the difficulty. It was most interesting. In 100 per cent of the cases examined thus far we have found that there has been a lesion of the right ureter. Some of these lesions are very interesting and I will show them to you now. One had a stone in the ureter. We have known of cases where a stone in the ureter was confused at times with appendicitis. With a stone in the ureter, we have vomiting, fever, and tenderness in the right groin, stricture of the ureter and distortion of the ureter will cause the same thing. One may have severe pain, a spasmodic right *rectus,* and vomiting. So the error in diagnosis is not a thing that one need scoff at because there are many points in common. Some of these ureter lesions have been very remarkable and I will be glad to show them to you as soon as the operator gets his machine fixed.

While he is tinkering with the apparatus, I would like to talk about something that I intended to speak of later. When I was in Copenhagen, I learned about a professor in the Veterinary College working on calves, who discovered that a certain gold salt would cure early tuberculosis. I investigated this thing rather thoroughly and found out that in certain early cases of pulmonary tuberculosis this substance was injected as we inject salvarsan in liquid medium divided into 12

or 14 doses. In many cases the cure was pretty definite and quite spectacular. In medium tuberculosis the results were, of course, not so remarkable; and in late tuberculosis, they seemed to do the patients harm by the injection. Also in surgical tuberculosis they found no beneficial results from the use of this material. The benefits, as I say, were secured in early tuberculosis. At first they gave only four doses, four tremendous doses and causing a great deal of reaction and having several deaths, but by the use of smaller doses, they were able to get excellent results.

SLIDES

Here is one of those cases which had been operated upon for appendicitis and you can see very clearly the lesion of the ureter shaped like a horse shoe. That case simply had a kidney belt given to her and the ureter was dilated by passing bougies in the customary manner and the patient's pain was relieved after our treatment.

Here you have a dilated kidney pelvis and this ureter turns right around in a circle.

Here is an interesting case. That also has to do with appendicitis. This young boy came in suffering from right-sided pain. To our amazement we found that the urine from his right side was perfectly all right. The urine from the left side was full of pus. By doing a pyelography we found that the upper pelvis was fairly normal. We found that this was a fused kidney, the lower pelvis of which was diseased. During our investigation and before we had him well along toward recovery by treatment, this boy had a collapse over in Brooklyn and was rushed to a hospital. His sister called us up, fortunately. It was easy to conceive of a surgeon doing an emergency operation and there was a bare possibility, of course, of him taking out this one good kidney and leaving the boy without any kidney at all, in which case he would have lived eight days.

Here we have an hematuria. I am sure you think that this condition is very serious. I have a great many cases referred to me from various life insurance companies to discover the cause of hematuria. I think pus in the urine and blood in the urine have very grave consequence to you in deciding about cases that are up for insurance. Here is a lady who had right upper quadrant pain; she had jaundice; she was considered to be a gall bladder case and was about to be operated upon for her gall bladder disease when the routine examination of the urine disclosed blood and the surgeon invited us to discover the cause of the bleeding. We found that her left kidney was in good condition and urine normal. The right kidney showed blood microscopically and the pyelogram showed this big distorted thing which proved to be a carcinoma of the kidney. The pelvis was distorted in this bolshevistic manner following no rules whatever and the diagnosis was very easy.

This was an interesting case, bilateral double kidneys, all four of them infected and here on this side connection between the upper calyx of the upper pelvis and this double kidney and the lower pelvis on that side, the other side being separate. That is supposed to be embryologically impossible, but we had a chance to study this lad's kidneys. He became despondent on account of some affairs at home and jumped out of the window. We sectioned this kidney through and through and found the fistula or connection entirely covered with mucosa just as the remainder of the pelvis was. I had another case of double kidney. A woman had a double kidney. The two ureters joined opposite the 3rd sacral foramen. SHE HAD PUS IN HER URINE. We catheterized both ureters and found no pus. We did a pyelogram on the affected side, on the side where she had the pain, and in doing this, we withdrew the catheter to this point, injected the sodium iodin and in this case it went up to the double kidney.

Here is a very interesting condition, the typical polycystic

kidney. When you see this type of pyelogram, you know that you have a polycystic kidney because you can see indentation of cysts in the pelvis at various points. It is always bilateral and very dangerous.

It occurs in families. This same woman's sister died of kidney failure following a minor operative procedure on her polycystic kidney.

Here is a most interesting case. The patient had right-sided pain. He presented this shadow before the pyelogram was done and we knew he had some calcified mass. We did the pyelogram and found distortion of the ureter, a double kink with the narrowing of the ureter. This kidney had practically no function and when we removed it under regional anesthesia, we found a unilateral cyst of the kidney which was calcified. I have seen one other such case.

We come now to the subject of tuberculosis. Tuberculosis interests everyone in every field. It is widespread and far-reaching. Tuberculosis in the urinary tract does two things: It either excavates or fills up with granulations, as this one has done. This is a perfectly typical case of a pyelogram, and uretogram, showing what tuberculosis does when it makes an earnest attempt to heal. The pelvis of the kidney becomes filled up with granulations and shows this sort of feathery distortion and the ureter becomes feathery as you see. It is a thing that one with experience can recognize at a glance and which is most important. The other thing that it does is simply to excavate and dilate both the kidney pelvis and the ureter. The ureter gives way. Sometimes the ureter gets as big as your thumb or as big as the small intestine. We have learned to recognize those two varieties and base our diagnosis very largely on the pyelogram. An interesting problem in tuberculosis is not particularly the diagnosis, because we find that fairly easy if the patient is put through a thorough examination. The thing where we fall down, all of us, is in the after care of tuberculosis cases. We have not

treated them well. There are practically no institutions for the care of post-operative cases of this sort. We must do something about it. When we work for the Metropolitan, we have a great advantage because Dr. Howk takes them up to Mt. McGregor and gives them the kind of care they all should have. The fight has just begun when the surgeon has taken out a tubercular organ. The patient should, I think, be sent to an institution or be taken care of just as thoroughly and just as carefully as the patient who has recovered from pulmonary tuberculosis. It is a thing that you men as Medical Directors of life insurance companies are interested in too, because your problem is the same as ours, to keep the patient alive as long as possible and as effectively as possible as a member of the community. I think we have fallen down terribly on that one thing. In our department we are taking it up with great seriousness and we intend to ally ourselves with some institution that will take care of these people, teach them how to live, and we also are anxious to follow them up with various sorts of treatment. We are going to try this gold salt treatment on certain cases and see whether we can utilize it in this way. The important thing seems to me to be the follow-up clinic, which we have. We should observe these patients and care for them in a general way after their local trouble is over.

Bladders are investigated so easily by the cystoscope that we usually do not do cystograms, but sometimes we have to and in those cases the cystogram is particularly valuable. Here is a case in point. This man had a very bad diverticulum which was retaining a large amount of urine filled with pus. If it empties itself, it does no harm, but most of them retain the urine. This is determined by a very satisfactory way we have of removing the sodium iodin from the bladder and filling it up with air. That will cause the bladder wall to contract and you can determine whether the diverticulum empties itself or whether it retains the fluid.

The next one shows a typical filling defect of massive carcinoma of the wall of the bladder. Ordinarily this could be seen perfectly with the cystoscope. The cystogram is unnecessary, but sometimes there is so much bleeding that it is impossible to see the bladder. This sort of a lesion is always accompanied by great pain and the patient does not always bear the cystocope well, so the cystogram is helpful.

This shows one of the more recent methods of investigation by injecting sodium iodide into the seminal vesicles through ejaculatory ducts. One of my associates, Dr. Delzell, has devised a needle, the point of which you see here. It catheterizes the ejaculatory duct and the sodium iodin is injected into it. In this case we disclosed an abscess of the seminal vesicle. He couldn't keep well without an operation and we had to resect it.

SECOND DAY

President Whitney in the chair. The meeting was called to order at 9:30 o'clock.

The Secretary announced that he had cast a ballot as instructed for the election of the officers and members of the Executive Council placed in nomination on the preceding day, as follows:

President,	Dr. Angier B. Hobbs
1st Vice President,	Dr. Wesley W. Beckett
2nd Vice President,	Dr. Robert M. Daley
Secretary,	Dr. Chester T. Brown
Treasurer,	Dr. Charles L. Christiernin
Editor of the Proceedings,	Dr. Eugene F. Russell

Members of the Executive Council:

Dr. George A. Van Wagenen
Dr. Edwin W. Dwight
Dr. J. Allen Patton
Dr. William Muhlberg
Dr. Ross Huston

These officers and members of the Executive Council were declared duly elected.

Dr. Whitney—The Committee on Urinary Cases, is that report ready, Dr. Patton?

REPORT OF THE COMMITTEE ON URINARY IMPAIRMENTS.

The Association, at its Thirty-fifth Annual Meeting in October, 1924, adopted the committee's recommendations for the small, moderate and large limits for quantative reports of albumin, and the committee was continued.

The members of the committee, from time to time during the past year, have informally discussed their problems and report as follows:

1. They believe more time should elapse before additional recommendations are made concerning albuminuria. Meanwhile, they will gladly receive and consider reports of methods used and results obtained by any company in its quantitative estimation of albumin.

2. The committee feels that quantitative estimation of glucose in glycosuria specimens has made distinct progress and definite recommendations can be made in the near future.

3. Microscopical methods have improved and the committee recommends changes from the standards adopted in 1917, at the Twenty-eighth Annual Meeting of the Association.

A. The sediment should be from about 15 cc. of urine centrifuged for four or five minutes at a rate of 2,500 revolutions per minute or for at least 10,000 revolutions. Care should be used in applying the centrifuge brake so as not to disturb the sediment.

B. Place on a slide the entire sediment or sufficient taken carefully by pipette from the top, middle and bottom of the sediment to insure a representative sample.

C. Use a cover slip or not, as your technique has developed.

D. The method of illumination is important and if, as is usual now, it be some form of artificial light, the heat from this should not distort the sediment by evaporation.

E. Examine thoroughly first with low and then, as needed, with high power objective, with due consideration to the eye-piece used, so that the total magnification is known in estimating a field.

4. Casts should be reported by number per slide, but each office is to decide upon their importance or significance for itself. Report as epithelial, granular or hyaline per official instructions.

5. The blood, plus, epithelial cells and crystals should be recorded separately, preferably per 1/6 field (4 or 4.4 mm. objective), with consideration given to power of eye-piece used (6x or 6.4x ocular), and counting enough fields to be sure the count is representative of the entire slide.

The report for blood and pus per official instructions, is dependent upon the interpretation of each office of the findings, and more definite recommendations will be made next year after further investigation.

A. Red blood cells.

B. Pus cells.

C. Epithelial cells.

Dr. J. Allen Patton,
Chairman.
Augustus S. Knight.
F. H. Rockwell.
William R. Ward.

Dr. Dwight—May I ask Dr. Patton one question. I notice that he specifies 2,500 revolutions. I would like to ask him as to whether the Committee has considered the effect of rapid centrifugalization—if that is the right word—on the disintegration or breaking up of casts.

Dr. Patton—That, I think, has been considered by the technicians in our laboratories, and I am frank to say, as far as the reports I receive from my own laboratory are concerned, we get practically no more in the number of proportion of broken casts if the specimen is centrifuged at the rate of 2,500 revolutions for at least 4 minutes, than we used to get with the old hand centrifugalization. Now, as to the possible further disintegration besides the breaking up, I don't believe that we will get enough complete disintegration of the cast formation so that the properly trained technician in the handling of the specimen will not find the casts if they are there in any appreciable number.

Dr. Dwight—I only want to say that we are experimenting along those lines at the present time. I am not sufficiently sure of my figures to give any, but as a centrifugalization of 2,500 would seem to me a pretty high rate, I wonder as to whether that was based on as serious a study as they have made of most of these other points or whether that was taken rather casually.

Dr. Patton—It is possible, Dr. Dwight, that it was taken rather casually. I don't know what the opinions of Dr. Knight, Dr. Rockwell and Dr. Ward are, but in general I

know it has been the practice in most of the laboratories for several years.

On motion, the report was adopted as read.

Dr. Whitney—Dr. Cragin has something he would like to demonstrate.

Dr. Cragin—We have had a little discussion at the Home Office of the Aetna concerning the value of the colors taken for the glucose test, and after talking with some of our expert dye men in and about Hartford, we decided that there is nothing to be done regarding anilines, and it occurred to me that possibly we might get colored glass. I have been fooling with this thing for the past six months and at last I have obtained from the Corning Glass Works some colors.

The show box unfortunately is not complete yet. I have been putting all my time in on the glass. This will have to be raised a little bit and some arrangement will have to be made to put the tubes in over the top. We have rather untoward conditions in our laboratory at present in that we are not able to get direct sunlight. Therefore, we use the Macbeth light over this box. The Macbeth light comes on here and is reflected forward. Our test tubes set in the different notches and we are able to match up our colors very closely. The only thing about this apparatus as made up at present is that there are two glaring defects. This No. 1 color is a little bit too yellow to my eye.

This first slot represents no sugar at all. The last over one-half of one per cent. Those are not really necessary, but the Corning Glass Works gave them to me so I put them in. Now, just one thing further in regard to this. We use pyrex tubes for our specimens. We have been buying our tubes from different firms with the result that no two tubes are alike. I had one man in particular make me a special set of ten and there was a variation of a half inch in the heights of the 25 cc. mark on the tubes. The Corning Works where they make the pyrex tubes tell me that if we will

give them a standard tube that they will select from the pyrex tubes that are being made there all the time the proper bores so that every pyrex tube will be of the same bore. Now that is very important because a variation in the diameter of the tube makes a great difference in the color.

The only objection other than that that I can see is that you are matching up a flat surface against a cylinder. I am not just satisfied with that. As the conjurer said last night, I have nothing up my sleeve, but I have a little something in my pocket. This is really a trick glass. I'll hold this up over in the sunlight so that you can see what it looks like. That really looks more like a test tube than the others. That glass is very, very hard to make and I doubt very much whether I can get satisfactory colors that way. I am having Mr. Macbeth of the Macbeth Daylighting Company make me up a viewing box with the Macbeth light over it, but these glasses, I may say, may be obtained from the Corning Glass Works and they will guarantee an absolute match for the standard colors.

That is about all that I have to present this morning. Perhaps if you will hold this up here in the sunlight, you will get a better idea as to how the colors show up. I will pass it around if you would like to see it.

Dr. Muhlberg—We have been experimenting for the past two years with color tubes, standard tubes of Dr. Benedict, and we have succeeded in making a solution, which is absolutely permanent. We kept them in the dark over a year and they permanently kept their color. These colors not only match exactly the Benedict standard, but they also match in colorimeter, which is rather unusual. We have asked Dr. Benedict to express his opinion as to the value of them, and he states that they work very satisfactory indeed. We have the exact formula for making them. I am sorry that we did not bring our formula with us today, but

if any of the members are interested, I will be very glad to give them the formula.

Dr. Whitney—We will now have the first paper this morning, "Medical Examiners for Life Insurance," by Dr. Wells.

Dr. Wells—Mr. President and Gentlemen: My first inclination was to apologize for this paper, which contains nothing of a scientific or statistical value, absolutely nothing, and I would apologize for it were it not for the fact that it was written at the distinct, definite request of Dr. Whitney, who thought that some of you might be interested in our plan for the selection of examiners practiced in Iowa.

This work is carried on through an organization of the Medical Directors of Life Insurance Companies of Iowa. Twelve companies are represented and I might say, to show that we are really interested in life insurance work, that six of those companies are represented in this meeting.

There are two or three things that I would like to stress relative to the work, and that is that the organization was created in 1905 with several objectives. The first was simply the matter of getting acquainted. The second was to meet and discuss insurance matters with the Actuarial Society of Des Moines and with invited guests who frequently presented papers for us on these subjects. Another object was to get a paper on insurance medicine or a paper, that could be appreciated by the ordinary examiner before each meeting of the State Medical Society and to get a similar paper before each county meeting, whenever that was possible.

The part of the work in which you might be interested is the selection and rating of our examiners, which is accomplished by representatives from each of these companies at a round table in consultation. When a name is brought up, that man is practically dissected. His personality, his habits, his practice, his ability as an examiner and his care in his work are all very freely discussed and the rating is made by these people in consultation. After the rating is com-

pleted, we publish a book giving the ratings of each examiner in the whole state, that is, each examiner who is doing work for any of the companies represented in our state organization. This is furnished through the different companies represented and it has been of so much value to us that I thought it might be of interest to you.

I will now pass around a couple of these books. One is an old book that has been marked up pretty thoroughly, because a new one has been issued since.

MEDICAL EXAMINERS FOR LIFE INSURANCE

By Dr. Fred L. Wells
Medical Director Equitable Life Insurance Co. of Iowa

The problem of the selection of satisfactory examiners for our work in all parts of the field has been and is with us constantly. We must all admit the advisability or necessity of securing the services of the proper men for the work.

The subject has been one of discussion at former meetings of this association. Dr. Muhlberg of the Union Central gave us a wonderful review of this work in 1923. I would refer you to his paper, which is published in the proceedings of the society under date of October, 1923, under the heading, "Selection of Medical Examiners." In that paper he reviews very carefully and fully the various methods of some forty-six companies in the selection of the proper men for appointment as examiners. There is no need to again review all these methods. The plans of practically all the companies have not changed to any great extent since his report was made, and the selections are now made in practically the same way and with probably the same results.

The fact that there are so many different plans for the selection of examiners convinces me that none has been found to fill the bill, or it would be used to the exclusion of the

others. Improvement in our methods is not only possible but necessary.

At the time Dr. Muhlberg's paper was written there seemed to be employed nine different methods of selection:

I. Through traveling medical inspectors.

II. By the efforts of lay inspectors who visit and nominate new men as they are needed.

III. Through medical referees.

IV. Through the offices and recommendation of a chief examiner in the territory.

V. Through the recommendation of other examiners in or near the territory.

VI. Through nomination of the agent or general agent.

VII. Through direct application of the physician desiring the appointment, with very careful investigation.

VIII. By the choice of men employed as examiners by other good companies.

IX. By use of the records of the American Medical Association.

To this list as submitted in Dr. Muhlberg's paper I desire to add two other methods:

X. A method to be described as through a central examination bureau located in the city in which an examination or examiner is desired.

XI. From a list of rated examiners collected and corrected to date by the medical directors of a state.

This last method is the one about which President Whitney desires me to speak—a method adopted by the medical directors of Iowa, and about which he has evidently heard.

You have all had experience with one or more of these methods. Each has its advantages and its disadvantages.

The selection by a medical inspector is, in my opinion, ideal

in most respects, but the cost of such service practically prohibits its use by most of the smaller companies.

I have had no experience with selection by lay inspectors, except those employed by the usual inspection bureaus. My experience with selection in that manner has been very unsatisfactory. Previous to opening the west coast for writing of insurance in the company I represent, I obtained through an inspection agency a list of the best examiners in each of the large cities on the coast. I then made a personal investigation of these men, and not a single one of the physicians recommended by the agency was found up to standard. They were considered unfavorably because of various factors: personality, age, experience (both as physicians and insurance examiners), location of office and character of associates and clientele. It seemed as though the inspector had simply recommended a personal friend of his for the place without reference to his ability or any of the various factors we consider should be present in a good appointee.

Selection through medical referees would, I think, be satisfactory, but we do not all have the medical-referee system in our various companies. We have practiced this method in our west coast offices with very good results. The referee for the territory is held responsible for the appointment of proper men for the work.

An effort to select proper men with the help of a chief examiner in a locality has also been fairly satisfactory.

The general-agency force of our company is a well-tried one, our general agents are old agents of the company, and we do at times get excellent men as a result of their investigation and help. Of course, all men suggested are very carefully inspected in various ways. Requests for new examiners in a territory or for changes in our examining force, when asked for by an agent, are often considered and acted upon favorably if a thorough investigation shows the need for the change or appointment.

I have had no experience with the method of selection practiced by the Union Central, as explained by Dr. Muhlberg in his paper on the subject.

The records of the American Medical Association are, no doubt, a valuable aid in the selection of examiners. We must all agree, however, that good physicians do not always make good, or even satisfactory, examiners. Graduates of absolutely good schools, even the ones who have the advantage of hospital training, do not all prove to be satisfactory examiners. There seems to be a lack of insurance sense in a great many good physicians. There is no doubt, however, that the results are better if selection is made from men with these past advantages, but the choice still has to be worked out by actual experience with their work.

Recently two new plans suggested for the selection of examiners have come to my notice.

One is for the centralization of examinations for a number of companies in a central office. In the larger cities the plan would be to have requests for examinations for any of the companies interested sent to a central bureau. The bureau agrees to furnish an absolutely good examiner for any case at any time and at any location in the territory, the expense of the central office to be covered by a reduction of twenty per cent of the examiner's fee as paid to him.

My chief objection to this plan is that it would be necessary to discontinue the use of our old, carefully instructed examiners or to pay them twenty per cent less for their services. I am afraid this would not be an incentive for any better work. Then, too much would depend upon the central management and choice of the examiner for any particular case. Also, the instruction of examiners as to any particular phase of the work to conform with the differences of opinion in the various companies would be very difficult, and we would have a much poorer control of the examiner situation.

I have recently received a letter from an association called a Medical Bureau requesting permission to furnish us names of examiners in any locality in Chicago. The bureau, as I understand it, simply furnishes names of good examiners for investigation and appointment, the charge for this service being paid by the examiner who is accepted and appointed. I have had no experience with this method but would not be favorably inclined to its use.

The use of the so-called insurance-examiner specialist, one who examines for a large number of companies, is at times satisfactory. However, I can see how difficulties may arise in some of these appointments. The specialist examiner is, of course, doing more work for one company than for others. He begins to think of his work and reports along the line of the opinions and desires of that one company. If that company pays no attention to reports of, say, cardio-respiratory or functional heart murmurs, the examiner is likely to fail to mention their existence to other companies for which he examines, even though they desire all such information with the idea of making their own decisions as to the character of the impairment. This trouble I have found to be present at times. On the whole, however, the use of such a man in an emergency is fairly safe.

The next method, one which has been tried out in Iowa and has proven very satisfactory, has in some way been brought to the attention of our president, Dr. Whitney, and that is responsible for his request that I talk on this subject.

In Iowa we have an association of medical directors of the Iowa home office companies. In 1915 a few of us got together at a state meeting of the Medical Society and decided to meet at some time during the days of the meeting of that society to discuss among ourselves items of interest in insurance matters. It was also a sort of get-acquainted proposition. We have felt that a personal acquaintance with our examiners has a very beneficial influence; and, with that

in view, we have frequently called in some of our good examiners for consultation and instruction. The plan worked so satisfactorily that it was then decided to meet twice a year with the same objects in view, one meeting to be during the meeting of the State Society, and the other in November of each year at Des Moines. The scope of the work was gradually enlarged, and all the medical directors of Iowa companies were invited to become members. We now have a membership from twelve companies.

Actuaries and other executives of our companies are invited to be present at the meetings, and matters of mutual interest are discussed. It has been felt that to a certain degree the education of executives along the lines of actuarial work and medical selection has been very helpful. These executives get the viewpoints of other departments, and our work is thereby made easier and our action better understood.

Papers are submitted by members and others, with usually a paper on insurance work by some outside man. I recall that Dr. Baker of the Kansas City Life, Dr. Cook of the Northwestern National, Mr. Mead, actuary of the Lincoln National, Dr. Wenstrand of the Northwestern Mutual, and Dr. Muhlberg of the Union Central have all given us excellent and helpful papers on insurance subjects.

The scope of the work has gradually increased by seeing that we were assigned time by the State Society for the presentation of an insurance paper at its yearly meetings, and we have endeavored to have a paper along these lines at the various county meetings whenever possible. We feel sure that this part of the work has also been productive of much good.

The examiner situation has always been very freely discussed, but now the lists of Iowa examiners of all the companies represented in the association are carefully gone over at least once a year by a representative of each company sitting at a round table. We have twelve companies rep-

resented in the association, and all are represented at the meeting by some medical director who has a good knowledge of the examiner situation. It usually takes about ten hours of very strenuous work to check our lists and make necessary corrections.

The name of every Iowa man who has an appointment as examiner for any of the companies represented is brought up in turn according to the alphabetical order of the town or city in which he is located. His ability, character, personality, habits, and general qualifications are freely discussed. Seldom has the name of a physician been brought up with whom some one or more of the directors present have not had a personal acquaintance, or an intimate knowledge of his work as an examiner.

All of the examiners are rated as of Class 1, 2, or 3 and are so recorded. A man may be rated as of Class 1 one year, and time may show that he has developed into a good rubber stamp examiner—one who always finds a blood pressure of 120-80, pulse 72, and specific gravity of 1.018. The rating is thereupon changed, and he is put into his proper position.

This list of rated examiners is published as a confidential guide for all the associated directors, and such a list has been in use by our companies for some years. We have, with no trouble and very little expense, the names of Class 1, 2 and 3 examiners in every locality in the state, and we can wire our agents instructions at any time.

The expense of this service is very small—in fact, so small that it has usually been a personal one with the members.

Inasmuch as we all, with the possible exception of the medical directors of nonmedical insurance companies, must admit that first-class examiners are essential to proper action upon risks, could not some plan be formulated to have a centralization of examiners' records? Could not societies in the various states, of which the Iowa Society might be considered

a unit, furnish to some central bureau such valuable first-hand information as to good and bad examiners in their respective states, which might then be given to companies upon application? It seems to me that the matter is of enough importance to be given consideration at this or some near future time.

What are we doing when we find an examiner who is an absolute crook? In Iowa his record is given to every medical director in the association, and each company is protected, but we are unable to protect our sister companies outside of the state.

A recent experience will illustrate. We had an examiner in Michigan who was having the agent insure his patients. He was recording as normal risks people he was at the time treating for decompensated heart lesions and other serious troubles. He was caught after one death had occurred about three weeks after he had pronounced the applicant normal. What protection have the companies throughout the United States against this man? With a central bureau for such information, we could spread the news very rapidly and with excellent results.

Many of our examiners are not good, and while our experience with two or three examinations may not be sufficient upon which to base an opinion as to an examiner's ability or to give him a rating, the experience of all the state companies may lead us to a very definite and proper decision.

The details of such a central organization would have to be carefully worked out. Possibly the M. I. B. or an organization similar in character could handle the work. It would seem that the most natural and logical central office for such work would be the M. I. B.—with its wonderful organization and ability to properly care for work of this character—the extra work due to the addition of a department of medical examiners could be very easily and properly cared for. Each state could report to the central office

the completed list of rated examiners and the necessary corrections each year. The list would then never be over one year old and errors would be few. The extra expense for the work would be nothing when compared to the benefits to be derived and would, therefore, not be prohibitive even for the smaller companies in the association. If found necessary to form some other central organization, the overhead might be taken care of by charges proportionate to the calls for information and advice.

The examiner situation does need attention not only very frequently but constantly. Might not the favorable mortality shown in non-medical cases be an indication that we are not getting from our examinations all the benefit of the five-year selection of examined applicants, because of the difficulty in getting enough of the work of any one examiner to enable us to form a proper decision as to his ability, or because of the many difficulties besetting us in the selection of the proper men?

I believe that any method which can be devised to make the work of selecting examiners easier, more uniform and efficient in its results, will be of great benefit to all companies.

Dr. Whitney—Dr. Beckett, will you kindly open the discussion?

Dr. Beckett—Mr. President and Members of the Association: I am sure that this Association is grateful to Dr. Wells for his excellent paper on this very important subject. His splendid suggestions should aid us in devising some uniform plan that will improve our present unsatisfactory methods for the selection of our medical examiners.

The Pacific Mutual Life Insurance Company has had no experience with traveling medical inspectors. I can well understand that a trained medical inspector would be better qualified to make investigations, inspections and appointments than anyone else. The expense to the Company is the chief objection to this plan. Then too, whenever an examiner is

needed it would not be practicable in most cases to send a medical inspector to that territory to make an investigation before making the appointment.

It is difficult for lay inspectors to select medical men who are best qualified to serve as examiners for an insurance company. Some of our least qualified and most unreliable examiners have been selected by lay inspectors. It takes a well-trained medical man to know medical men and to select only those who are qualified and who will give prompt, conscientious service to the companies they represent.

Our Company has never employed medical referees. Instead of medical referees, this Company uses their Chief Medical Examiner to get information regarding applicants for appointment as medical examiners.

Our Chief Medical Examiners have also given us much valuable information regarding our examiners who have already been placed on our examining boards.

Where we have no Chief Medical Examiner, our regular examiners have been of much assistance to us in the selection of our examiners in or near their territories. If they do not personally know the applicants for appointments, they can usually get sufficient information regarding their qualifications and reliability to serve our purpose.

The plan of having our agents or general agents select the examiner has proven very unsatisfactory. Many agents would use good judgment from a layman's viewpoint and would consider the company's interests in the selection of an examiner, but there are other agents (and their name is legion), who would select any doctor who would serve their interests rather than the interests of the company they represent. These same agents frequently exert their ingenuity in concocting reason for discontinuing a painstaking, honest, regular examiner for the appointment of one that is careless, incompetent and dishonest. He is too old, too slow, not

accommodating, not a booster for the company, is prejudiced in favor of another company, etc., etc.

Many medical men apply for appointments on our medical boards who make splendid medical examiners. The position today is attractive to a certain class of the profession. There are others who apply who are incompetent, are not successful practitioners, and who see in the appointment only a means of adding to their meager incomes.

Examiners employed by other companies, if especially recommended by the Medical Directors of those companies, are reliable and safe and their insurance training is an advantage to the company.

The American Medical Association Directory gives us considerable general information regarding its members, but it does not tell us anything of the applicant's honesty, his standing in the community, his tactfulness, his office equipment, and many other qualifications which are necessary to make him a desirable examiner.

I fully agree with Dr. Wells regarding the use of the so-called insurance examiner specialist, who examines for a large number of companies. This plan does not as a rule appeal to the agents and has not proven satisfactory to our Company. Neither has our experience been favorable with medical bureaus that furnish names of doctors for appointment as medical examiners.

I am very much impressed with the method described by Dr. Wells and which has been adopted by the Medical Directors of the Iowa Insurance Companies. If we could have such an association in every state, it would do much to solve the problem of the selection of our medical examiners. It could also do much to eliminate the undesirable examiners we already have on our examining boards. I like the suggestion he has made to extend this plan to other states. An annually revised list of the examiners of each company, rated as of Class 1, 2 or 3, according to the Iowa plan, and made

available to any regular company wishing it, would help very much to standardize medical examiners, and when such a plan is known to the examiners it would do much to improve their efficiency.

I am heartily in favor of any plan that will bring about a more uniform selection of desirable examiners and the education of these examiners to a more thorough understanding of insurance principles, their obligations to their company, to the applicant and to the agent.

It seems to me a central bureau established along the lines of the Medical Information Bureau could handle this matter more efficiently than could any other organization. The bureau could keep a record of the medical examiners of the various companies—their age, years in practice, professional standing, reliability, insurance experience, their office and laboratory equipment, specialty they practice and their general fitness for the position of medical examiner. This would save much reduplication of investigations by the various companies.

A list of undesirable medical examiners that have been dropped for cause could also be kept by the bureau and thus prevent their appointment by other companies. If this became generally known, it would have a salutary effect in improving the morale and efficiency of our examiners. A list of reliable examiners could also be kept and furnished on telegraphic notice.

Before an applicant is appointed as examiner for the Pacific Mutual Life Insurance Company, a very careful investigation is made through our chief or regular medical examiners, through other insurance companies and through our own inspectors. A report from the Retail Credit Company is also secured in every case.

If all the companies would code with the Medical Information Bureau their reasons for discontinuing examiners many undesirable appointments would not be made.

Dr. Whitney: Dr. Grosvenor, will you kindly continue the discussion?

Dr. Grosvenor—Mr. President and Gentlemen: I have not very much to offer. I think that perhaps in the Iowa idea there is a nucleus of something that this Association can do. It doesn't seem practicable to me as a country-wide working plan, but I believe that much can be done through a central bureau whereby we may all know that when a physician applies to us as for an examinership, if he says he is an examiner for one of our reputable brothers, we will know that he is telling us the truth and I think that we should work out some plan whereby if a man is discontinued for cause, the rest of us should be in a position to know it. We will all profit by it and it seems that there should be some safe way of working out some such plan. I have hopes that the Committee will be able to present something like that to the Association, which will be a proper method of procedure.

The matter of grading examiners is, I think, a plan that perhaps can be refined a bit too much, perhaps not.

Dr. Whitney—Dr. Muhlberg.

Dr. Muhlberg—Mr. President: My remarks are going to be very brief, because I heartily concur in the recommendation and the conclusions drawn in Dr. Wells' most excellent paper, where, of course, such state organizations can be effected. About a year ago, I had the pleasure of attending one of the meetings of the Association of Medical Directors of the Iowa Home Office Companies, and had the opportunity of discussing with the various Medical Directors, their plan of selecting and checking medical examiners in that State.

The whole plan impressed me most favorably—in fact, I can conceive of no method that could give better practical results. There is only one difficulty. Their organization is built up on a spirit of co-operation and good fellowship that might be difficult to duplicate in all other States, and the work involved is necessarily quite laborious. However, if similar

organizations could be formed in every State and if such associations would then freely divulge their reports, the problem of the selection of the medical examiner would be largely solved.

But in the absence of such organizations, I still feel that it would be wise to have some central organization—perhaps, as suggested by Dr. Wells, the M. I. B.—whose function it would be to issue cards of rating, etc., on various examiners of Insurance Companies. Such a central bureau would operate best if organized on a State basis, as outlined by Dr. Wells; but it seems to me that even in the absence of State organizations, it would furnish valuable data.

To convince yourself, however, of the value of selection of medical examiners conducted by the Iowa Medical Directors, it would really repay you to attend one of their meetings and study their plan first-hand.

I believe that one of the most important elements entering into the make-up of a really successful insurance examiner is character, and unfortunately character is not always a stable quantity, or quality, such as the novelists would have us believe. There was an example of that in our own home town. Some years ago, some twenty years ago, a brilliant young doctor, who had the very best training, who acquired some of his education abroad, and who came of one of the very best families in Cincinnati, a man of unquestionably good character, and strong character, was appointed medical examiner for some dozen companies. For at least ten years he made a most excellent examiner, but then, unfortunately, his wife developed social aspirations which he tried to finance unsuccessfully, and the result was he found himself in difficulties. He began, thereupon, to practice little irregularities in a professional way. I noticed that he was doing things that the really ethical physician should not do, but he always kept strictly within the law. I didn't like his methods of doing things, so I quietly dropped him. About three or four years

ago, the doctor died and almost coincidently the agent who had been operating with him likewise died, and through gossip and through other agents, I learned the facts, that this doctor who had previously been of such strong character had become one of the most dangerous forms of medical examiner that we have to deal with. He and this agent had been co-operating in putting very questionable risks in many companies and it is said that his income from commissions that he split with this agent far exceeded the income that he derived from his insurance examinations.

Dr. Whitney—Dr. Russell.

Dr. Russell—Mr. President and Gentlemen: The last sentence in Dr. Wells' paper is the keynote of his article—namely any method that can be devised to make the work of selecting examiners easier, more uniform and efficient will be of great benefit to all companies. To obtain such a method necessitates great thought and planning. A committee has been appointed and is functioning for the purpose of considering the advisability of listing and classifying Life Insurance Examiners through a central bureau.

There are several objections to putting on record the ability of certain physicians, principally from a legal standpoint, and until this matter is ironed out, it will be necessary for many companies to continue to select examiners in the method which has been found most satisfactory.

The method adopted by the Medical Director of Equitable Life of Iowa has worked out very satisfactorily, but it is a question if such a method would work out with the larger companies which have from a thousand examiners upwards in such states as New York and Pennsylvania.

Dr. Wells mentioned Central Bureau physicians. This would not appeal to me, as I am very skeptical of all physicians connected with such bureaus, as it has been my experience that most of these men are either unsuccessful in their private practice or are so unexperienced that an accurate

report can not be obtained. Again a physician who will cut rates for an examination is just as liable to split commissions with agents to pass cases. Again sooner or later an agent will override the bureau and use whatever physician he desires and physicians in turn will object to paying the bureau twenty per cent for work that comes direct to them.

All the methods as outlined in Dr. Well's paper have been given very great thought by the Company which I represent, The Mutual Life Insurance Company of New York, and we are more firmly convinced that the Medical Referee system from both the Medical and Agency standpoint is nearer the ideal than any other. Of course, it has its disadvantages, but in the main it has proved its worth, not only in the expedition of business but in the mortality savings.

Dr. Whitney—This question is open for discussion.

Doctor Toulmin—I am quite ready to say that the most satisfactory way of obtaining first-class examiners is through the properly qualified Medical Inspector in the Field. I do not think that our Medical Inspector is "influenced by the pictures on the wall of the Medical Examiner's office," or by "the amount of literature on his desk." I can assure you that they are not the basic factors of his selection. Our Medical Inspector not only interviews the examiners, but he talks to a good many other Doctors in the same city or county; so I still feel that with us, we get the very best results from the Medical Inspector in the field.

However, I wish particularly to refer to a method of review of our examiners. I believe I spoke of this method when discussing Doctor Muhlberg's paper at a previous meeting of this Association. Some of you may have made use of the same plan. To those who have not done so, it should be of interest.

The plan is as follows: When we wish to review the examiners of any given state, we select in each county, an examiner who is personally known to us and in whom we

have full confidence. To each we send a list of the names of our present examining staff, by cities and towns in his county, with a carefully worded letter in which we outline our plan, give reasons for asking his co-operation, and request his frank comments and suggestions. They are practically always glad to give us full information and consider the compliment we pay them in choosing them for the work as sufficient remuneration. We often find that one examiner has moved away, another has died, and a third has deteriorated and is no longer the best to represent us. If he suggests a new examiner, we make our usual thorough investigation.

We have had this plan in operation a great many years, and it has been pre-eminently satisfactory to us.

Dr. Whitney—Are there any further remarks regarding this paper?

Dr. Milroy—A matter that has occurred to me in reference to this subject is getting back to the beginning of it, the fundamental basis of it, namely, the education of physicians to make proper examinations. In Omaha we have a medical department of the University of Nebraska, and for quite a long period, I have been accustomed to give a short course on medical examinations, I think about 10 or 12 periods during one of the semesters, and I think I have been able to do some good. Of course the results are not seen immediately.

It is very different from the matter that is being discussed just now, but it seems to me it is something worth thinking about. I do not know in how many medical schools of the country such a course is given; I have never undertaken to find out. My impression is that it is a very common practice, though I may be wrong, but it occurred to me that it is something worth while and that a formal request from this Association to the medical schools would result in their providing such a course for the senior classes and so eventually result in material benefit to this work.

Dr. Wilson—My experience might be of interest. I have

been teaching in the University of Maryland for about twenty-five years, and over fifteen years ago I was reporting on medical examinations for the Maryland Life. It was then only a small company, writing business at that time in only four states, Maryland, Virginia, North Carolina and South Carolina. Through my teaching connections, I knew quite a number of men all through those states in whom I had confidence. So I followed up what Dr. Toulmin has done, sent each one of them a list of men and asked for recommendations and I have never received so many frank letters and free expressions of opinion. It was simply invaluable.

Dr. Whitney—Dr. Wells, have you anything to add in closing?

Dr. Wells—I have nothing to add.

Doctor Whitney—Our next paper is "Disability and Mortality in Arrested Tubercular Cases" by Dr. Edward S. MacSweeney, Medical Director of the New York Telephone Company. Doctor MacSweeney.

Doctor MacSweeney—The paper which I prepared at Doctor Whitney's kind invitation for this morning is necessarily rather lengthy, involving a considerable amount of argument and explanation and has already been printed and placed in your hands, although it was not edited, I am sorry to say, before you got it, but I think you can see at least what it is all about. At Doctor Whitney's suggestion, I have prepared a short abstract which will take but a few minutes to read and which presents the gist of the paper, and if any of you are interested in it any further, you can take the paper itself and go into it at your leisure.

The purpose of my paper, copies of which unedited have been placed in your hands, was by an examination of a fairly large reliable statistic, to find an answer to some questions regarding recovered tuberculosis cases. The matter is considered under three heads—the first dealing with mortalities

or recoveries; the second with morbidity, and the third the application of the findings to life insurance.

The first part of the paper considers the origin and limitations of the figures available for examination, and explains the abstracts presented. The paper then proceeds in the first section to seek answers to the questions, "How many cases of tuberculosis recover," "How long do they live," "What do they finally die of" and "How do they compare with normal average persons."

The analysis is summarized as follows:

1. The crude mortality of tuberculosis is very high.

2. Stage of disease at which treated influences the outcome so greatly as to give reverse figures as between early and far advanced.

3. That various other ascertainable factors have a demonstrated influence such as race, sex, presence of tubercle bacilli, the duration and immediate result of treatment and of marked importance, age.

4. That the importance of social status is less than frequently claimed.

5. That people who have had active clinical tuberculosis finally die of it.

6. That if patients are going to die soon of their tuberculosis, they will mostly die very soon—60 to 90% of all deaths occurring within three years.

7. That after the fifth year mortality is so much less, and after the tenth year so much less again that the cases considered by five-year periods constitute essentially different groups.

8. Comparison with normal groups is made by reference to tables.

The second section of the paper deals with morbidity and presents the conclusions as an answer to the question, "What are these people sick with and how much?"

For purpose of clarifying the argument, consideration is given only to morbidity five years or more after treatment and the reasons for this stated.

Morbidity is taken up under three heads—that of the terminal illness, that of intercurrent relapses of the subject's tuberculosis with recovery, and that from other disabling sickness and the results of the analysis summarized as follows:

1. Morbidity in cases of tuberculosis is so excessive in the first few years after treatment as not to be practically calculable either as to groups or individuals.

2. The terminal morbidity of tuberculosis is as long as in any other disease, longer than in all but a few, and out of all relation to the greater number. Eighteen months seems a fair average estimate of duration.

3. This holds for all cases irrespective of length of life.

4. That after the fifth year this long terminal illness of those who die is the essential element of morbidity.

5. Intercurrent relapse is not an important factor either medically or otherwise.

6. Illness from causes other than tuberculosis is less than the average.

7. The total excess morbidity of this group can be expressed as the product of their excess mortality multiplied by the factor how much 18 months exceeds the general average of terminal illnesses.

The third section of the paper deals with the insurance bearings of the previous two. Attention is first called to the three distinct types of cases which are encountered in insurance practice and the necessity of avoiding confusion on this score.

The recovered tuberculosis case which we are considering, about which enough is known to admit of an accurate estimate; the similar but unknown case which will give the same experience, but will not be properly rated; and the cases which develop tuberculosis after being insured, which will give a high mortality and morbidity.

So far as insuring known recovered cases is concerned, the conclusion is reached that if the lapse of five years since the last clinical activity is taken as the basis of consideration and careful selection is made the basis of acceptance, we have here a group probably better than most substandards and to whom profitable insurance can be offered at rates which will attract business.

A plea is made for the necessity of specialized expert service in this work if the best results are to be obtained not only in rating recovered tuberculosis cases, but in determining the tuberculosis factor in all applicants. Only a person skilled in this field can obtain (often by indirection) the necessary information on which to base a conclusion and apply the proper judgment in valuing it.

Because with increasing numbers insured there goes a disproportionately increased risk, careful selection is necessary. The criteria of selection are the same as those of medical prognosis. The basis for approving premium waiver and sickness benefit clauses in these cases is stated in the previous section on morbidity.

There is no nonmedical hazard involved. Insurance or reinsurance without examination is foolhardy from the standpoint of tuberculosis.

DISABILITY AND MORTALITY IN ARRESTED TUBERCULAR CASES

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Despite the satisfactory reduction in tuberculosis mortality during the past twenty-five years, it remains the captain of the men of death for the productive ages and takes a toll of approximately one death in three. Amongst young women there has probably been a slight increase. To both the individual affected and those who must pay the bills the results of treatment are of prime importance in deciding the methods to follow and the expenditure warranted. A community may consider money not ill spent on sick persons if the justification be only humanitarian, or if prevention by segregation and education of the sick is the chief object achieved, but from the sanatorium method which has been followed on a large scale for more than a generation, one must concede that more than this has been expected and thought to have been obtained, namely, a large percentage of cures. Valuation of the results in this respect becomes, therefore, an important thing. There are over 700 sanatoria in this country alone. Whether the expense of their maintenance is worth while, whether the selection of cases for them and the length of stay in them is reasonable, whether their methods are sound, must hang to a considerable extent on the after health and usefulness of their patients. Another important question in this connection has developed in the past few years, to wit: Sick benefit organizations, and business concerns either through them or directly, undertaking the care of such cases with a view to cure, as the cases run into long expensive care. Both of these interests require a definite answer to the question, does it pay. While opinion may well differ as to the terms of the answer from a fraction of one per cent of salvage up to any figure,

yet this percentage should be known as a basis for intelligent action. Again when money is to be spent on examination of applicants for employment, how large a fraction of it shall represent an effort to uncover tuberculosis can only be determined if we know to what extent tuberculosis constitutes a hazard in all the ramifications of training, length of service, liabilities incurred, etc. These and all kindred considerations together are certainly consequential. To you gentlemen the problem has particular interest in view of the largely extended field and amount of insurance written. The selection of risks from a mortality standpoint and with the growth of health provisions in policies from a morbidity standpoint as well cannot give the best results unless one properly appraises the risks of tuberculosis. Should any recovered consumptive be accepted? If so, which and on what terms can only be something more than rule of thumb if we know what is the evidence as to survival and health.

If we frame our questions in this fashion: What proportion of cases of tuberculosis recover? How long do they live? What do they finally die of? With what are they sick meanwhile? And in what respect do they differ from comparable people? And could answer them we would have all the information needed for the purposes enumerated. The answers in fullness cannot, so far as I can determine, be obtained but my reason for appearing before you today is to present what good evidence is available. In some respects it is very good and strong, in others weak, but on the whole, worth while. The data which I present comes almost entirely from sanatoria, and the reason for going to the sanatoria for it is not merely necessity due to the impossibility of gathering sufficient material from any other source, but is a matter of choice. The sanatorium was the outgrowth of centuries of observation that a certain proportion of consumptives recover. Consideration of the reason for these recoveries led to the conclusion almost simultaneously on the part of an English-

man, Boddington, and a German, Brehmer, that the favorable factors were fresh air, abundant nourishment and careful regulation of physical activity. Giving full effect to the still hidden more precise mechanism involved, which in its workings and effects constantly astounds anyone who handles these people in large numbers, these two observers felt assured that by and large those patients who even blindly had brought about a combination of these factors in a considerable degree in their lives constituted the favorable fraction. From this, they, especially Brehmer, developed a scheme of ordered life which kept these influences operating in fullest measure maintained for a sufficient time to produce definite effects which has come to be known as the sanatorium method, because first, and still best, carried out in institutions located, built and equipped and organized for the purpose. Their conclusions have met wide if not universal acceptance and this method of treatment, whether carried out in or outside of a special institution, is today authoritatively and generally, imperfect as it may be, recognized as the best available. No specific has been found for tuberculosis, and the many special treatments introduced and widely practiced are known to be only adjurants. The sanatoria have received, kept under observation and treated in general according to this system, for considerable periods some hundreds of thousands of patients for many years. Records of the patients during their residence have been kept and in many instances follow up diligently maintained. Some sanatoria are poorly conducted and have failed to carry out their purpose, but if on the whole the sanatoria have not achieved worth while results, we must hardly look for them elsewhere and by what is known of these results we can discount the whole number of cases.

There is an old recipe for rabbit stew which begins with the direction "to first catch your rabbit." It is well to always have this in mind when working with medical statistics, so, before presenting my data it may be worth while to give a

few minutes to the general considerations in the light of which it must be considered. The rate of infection of the whole population with tuberculosis is admittedly considerable and though there is sharp disagreement as to just how high an incidence exists in various localities and in various social classes, it is without question much greater than the total of clinical cases. These infectives, if the infection ever went far enough to influence them as risks, can often be recognized by the presence or history of running ears, fistulas in ano, cervical glands, hemoptyses, pleurises with effusion, prolonged disability or convalescence, persons who have spent long periods in the country for their health and the lightweights, especially those who always take their vacations in the mountains because it "does them so much good" or "puts them on their feet for the year." To rate these things, however, we must know them and many people have short memories.

Early tuberculosis too often bears a close resemblance in its symptoms to a severe cold or grippe or repeated colds which occurrences may lead to an adjustment on the individual's part in work or habits or to a short or long vacation which may be quite sufficient to bring even a moderate tuberculosis under control and it, therefore, has never been recognized by either physician or patient.

The more definite healed lesions found at autopsy in cases without history are easily thus explained. Persons in position to indulge themselves in an occasional outing of this kind, and in doing it following a social custom as much as because of health, may even experience many such episodes and be honestly ignorant of their significance. Again, the patient may have been dull or the doctor secretive. All these people are apt to be classed with the nontuberculosis as against the tuberculosis risks in insurance practice. Any figures for the latter, therefore, would seem subject to some weighting if a comparison is made. If these cases were lifted out of

the non-tb risk figures, these figures would probably be better. Contrawise as they showed definite clinical signs yet came to arrest, they should be classed as favorable and their inclusion with the tuberculosis group might influence the totals of the latter materially.

Of some, but by no means equal effect we have on the other hand the possibly nontuberculosis included in all sanatorium figures. Demonstration of tubercle bacilli is still the one positive criterion of diagnosis, and the sputum negative group is considerable. Diagnostic standards have shifted from time to time and it is only comparatively lately that because of criticism and because of the availability of newer means, such as the X-ray, that more intensive efforts have been made to avoid error. Data gathered a decade ago is on this account not as exact as that accumulated in recent years, but as the chief value of all of it, lies in the passage of time we must use the other less accurate material for the longer terms of experience subsequent to treatment. These considerations remind us that we are dealing with an imperfect statistic and not comparing a pure tuberculosis group with a nontuberculosis but one only partially so. A point which has been much stressed is that the most complete figures available (which are amongst those I will show you today) come from sanatoria patronized by persons above the working class group. It has been accepted apparently generally, that the results in these cases who it has been said can make keeping well their chief business, are not applicable to the general run of wage earners. If this were true it would mean a great deal, especially in present insurance practice, but while one may not bluntly say it is not so, I doubt if there is so great a divergence in ultimate results, as has been assumed. Some statistics from English sanatoria for the working classes, which I will give you, are not strikingly different from those from Trudeau. As another modifying but probably not controlling consideration in so large a material we have to remember that

the classification by stage is often faulty. The incipients or first stage probably all belong there or are nontuberculous, the far advanced or third stage are doubtless properly labelled, but the bulk of the cases are called second stage (by some, "advanced"), and many would be shifted one way or the other in the totals in different hands and at different times. The same applies to condition on discharge. Finally in tracing ex-patients, particularly the foreign element, and as one goes down in the social scale there is year by year an increasing number of lost cases. These are handled differently by different commentators, some arguing that you always know of the deaths and practically always of the wrecks and only lose the well people who want to forget their experience and resort to all sorts of means, even changing their names to escape you; therefore, the truth is better than your figures. Obviously such reasoning leaving speculative balances while convenient and likely as not true in the main, is not satisfactory.

Anyone taking up a study of this kind, even one as familiar with it for years as myself, would, I am sure, at first feel gratified with the immense number of references in the literature and what purport to be studies available. But on even cursory examination most of them prove to be vague generalities full of statistical error and unsupported conclusions. I am presenting to you today a selection of the most reliable rather than a composite of all published. I had intended to place in your hands a complete bibliography of the subject, but on this same account gave up the idea as it would only lead to your wasting your time going through it.

The material I have culled you have references to in your hands which seemed a more convenient form to follow, as we go along, than charts on the wall. You may care to look it over more thoroughly at your leisure. Each numbered study shows its origin at the top of the sheet. These are, of course, extracts, as many of the original articles contain elab-

orate statistical tables, and I have only lifted out, without distortion, what was of interest to us today. The topics are alphabetically indexed on the first sheet and you will find the corresponding key letter at the right-hand upper corner of each page.

Study One includes not only the work of the authors, but a statistical analysis of much of the same material by independent students (Elderton and Perry). They used a different set of mortality tables (English 6) than did Brown and Pope, who first analyzed this data. The effect is not great though to the disadvantage of the lives considered, but had a still later table been employed, such as English 8, the effect would have been appreciable (Bardswell in Study). It is the best thing of the kind which has yet appeared embracing a large number of cases with a small factor of error and a long post sanatorium experience.

This and Study Two deals largely with professional, semi-professional and business men and women. As Bardswell says, "The better class, socially speaking, many of them well-to-do leisured people, though the majority belong to that element of the middle class who are somewhat removed from the struggle for existence and enjoy the benefits of comfortable homes and favorable conditions generally."

Study Three represents a middle class clientel of small means, and Study Five the working class.

All in all they probably give us a fair cross section of insurance risks. Numbers one, two, three and five are particularly valuable as the results have been calculated by competent statisticians against average expectancies. The average expectancies used in all the percentages and ratios shown are normal general populations from life tables, not (with the exception of Study 10) special insurance tables. The latter probably is.

Number six sets up a comparison between sanatorium and non-sanatorium patients with which we have no particular

concern, but in passing it is of interest. Elderton and Perry made a similar study and reached the conclusion that results were much the same under both treatments. The character of the non-sanatorium treatment is not shown and there is really no basis for pursuing the subject further. Doctor Russell has published figures of his work here in New York, which are interesting in this connection. Combined, the studies deal in detail with about 18,000 cases and in general with many more.

There is a vast store of valuable material in the German Insurance Statistics, but I could not obtain it in form to use. Doubtless the records of some of the fraternal orders and sick insurance societies would be useful also, but that too was not available. There seems no reason to believe that what we have here shows any great errors or that to go further afield would likely lead to different conclusions. The actual experience of your companies with insured tuberculosis cases would be most valuable of all but apparently has not been published.

I propose then that we revert to our questions and see how far the answers can be obtained from what we have here.

The first was—"How many cases of tuberculosis recover, how long do they live, and what do they finally die of?"

Our studies are not homogeneous in that some calculations are made on the basis of date of admission, while others are as of discharge (See e. g. Elderton and Perry Study 1—Hartley Winfgield and Thompson Study 5). Merely to correct this time error one could probably add six months to the former. But there is a more important lack of unity in that all the various studies deal with cases both during the period of their disease as well as after recovery. Obviously the far advanced cases going forward steadily to death and the other cases classed as active (see Study 2), still sick, have not recovered and do not, therefore, come within the terms of the title of this paper. Moreover, some of the pa-

tients were experiencing their first "attack" if we may so call it, of tuberculosis; others were going through later exacerbations. Also the active evidence of disease may have been present for an indefinite number of months before the case was included in the tables or have been brought under control an indefinite number of months previous to discharge. This makes it impossible to precisely get at the state of affairs at given times *after* the attack though if we speak in terms of years we at least know that during a given year the disease was active. (The number of cases received in the sanatoria already in a state of arrest is not known but certainly is not large enough to affect these figures.) But these considerations do not invalidate the material for our purposes, for whether we take them separately or together, each as a whole or analyze its parts, the same outstanding fact is evident that the crude mortality rate in tuberculosis is very high. Study One shows over 38%, Study Two about 50%, Study Three 40%, Study Four 48% and not to spend too much time on this topic, the others much the same. They are all close enough to indicate accuracy. These high crude rates are further evidenced by comparison with corresponding general population groups (see Studies 1, 2, 3, 5, not reproduced in our extract), 8 and 10. If we break the whole number up into groups, however, leading facts begin to appear. Thus, in Study 1, though there was a *mortality* amongst the first stage of 23%, this was directly reversed as regards the far advanced which showed a *survival* of only 30% and a *mortality* of 70%. The second stage stand midway. In Study two the relative figures for 1st and 3rd stages are—1st stage 75.6% alive and 3rd stage 88% dead (or 70%). Study 4 shows even more striking disparity, 84.4% of early cases alive as against only 4.5% of the far advanced. See also Studies 3, 5, 9. There is no doubt, other things being equal the earlier the stage at which the case is brought under treatment, the directly better is the chance of recovery—this

is so important that it outweighs a great number of adverse factors and is the one thing which offers a promise of improving in large measure the terrible mortality from consumption. If we analyze the cases still further by the known presence or absence of tubercle bacilli at any time in their history we also find differences with an advantage to the negative cases. Though the stage is not stated, Studies 1, 3, 4, 6, 9 show this contrast. This negative group includes the non-tuberculous wrongfully diagnosed as tbc., but aside from the fact that most of them were so classed after diagnostic study, the group as a whole has a mortality in excess of the general population rate and it has been thought on this score to be a true tuberculosis group and the error not large (Study 3, page 15). Again decided variations are shown according to the immediate results obtained from treatment (see Studies 2, 3). This is undoubtedly to a great extent the same thing as stage of disease.

The effect on expectation of life is summarized by Brown and Pope in Study 1.

Differences are also noted for other causes which, if not uniform in the various studies, show the same trend and are material. The principal ones are: Race, which I have not pictured as of no great immediate interest, but the figures are uniformly worse for colored. Sex shows some effect. The differences may be dependent on pregnancy and childbirth, but have been variously interpreted (see Studies 1, 2, 3, 4, 6, 12). Duration of treatment is an important factor. For brevity sake, I have not reproduced the figures for this as it is universally conceded. Almost every sanatorium report for years past has some contribution to this subject. Six months is generally regarded as an irreducible minimum to get permanent results and one to two years as desirable with an at least equal after period of regulated life and careful oversight. Healing seems to usually take two years after it is well under way in even small lesions and this is a critical period (see

Study 1). Choice of subsequent occupation (see Study 9B), of more importance, the after care (see Study 9A) are demonstrated influences. Social status might seem to mean much the same thing, but apparently does not, judging from the similarity of results obtained at Trudeau (Adirondack), which has a good class, Study 1, Midhurst, which has a poorer class, Study 3, and Frimley, a common working class, Study 5. Even if people have money and education they may not have brains or use them and differences in temperament and many other things may play a part. Bardswell's table of the occupations of his advanced cases (also from the better class) is suggestive (Study 2).

Finally, there are two deductions to be made of immense practical importance, namely, the influence of age and the period at which death is apt to occur, if at all, after treatment. Ages are shown in Studies 6, but I have omitted the elaborate age tables which one can find in several of the originals. All the investigators are in agreement that youth is a handicap and the general conclusion is well illustrated by Bardswell's and Thompson's conclusion (Study 3) "mortality is in general heavy and relatively excessive at younger ages" and what is said by Cox, who made Study 6, in commenting on his figures—"The mortality is greater at age 15 to 25 with positive sputum than in any other group."

As for the time at which death is apt to occur, let us look at Studies 1, 2, 4, 5, 6, 9, 11, 13. The high death rate in the two years following treatment and in the second to fourth years would seem to reflect only a modification of the course of the disease by treatment or ignorance or neglect of the considerations noted above under duration of treatment. Failure to properly care for themselves in the critical period after healing has begun may lead to relapse and death or at least entry on the terminal stage. Positive cases are noted as particularly prone to relapse no matter how well they may seem.

Here it is worth while taking note of the difference in mortality figures of the various studies even for the same stage cases. It is shown most strikingly in Study 1, which divides its total material into three groups according to elapsed years. In the oldest group the mortality of the far advanced is given as 99%, whereas in the latest group it is 38%. This may to some extent be due to improvement in treatment, is probably due in some measure to better selection of cases from the standpoint of prospect of cure, but is most likely nearly all to be accounted to the fact that they had not yet had time to die. These differences in crude figures, even from one source, show how essential it is to take all factors into consideration in working on this problem or in using the various studies in conjunction. This variation in the three groups in Study 1 gives us a check on the general accuracy of our conclusions.

Only one conclusion is possible—if patients are going to die soon of their tuberculosis they will nearly all do it. This is a controlling fact. The death rates for the 1st five years and subsequent five-year periods after treatment are totally different things.

To summarize:

The crude mortality of tuberculosis is very high.

Stage of disease at which treated influences the outcome so greatly as to give reverse figures as between the early and far advanced. The rates for incipients are two to six times the normal, for moderately advanced—over 16 times, for the far advanced—about 38 times.

That these rates are highest amongst the young and when tubercle bacilli are present in the suptum. For male incipients tuberculosis adds 40 years to the risk at 23 years of age, in the 28 to 32 year group 19 years, and at 33 and over 7 to 8 years. For females the addition is about 22 years up to 33 and 7 years thereafter.

That 60 to 90% of all deaths occur within five years. If we forget this we miss the meat in the nut and get a wholly erroneous impression from all the figures. Up to the fifth year consumptives are a foolhardy risk, from the fifth to the tenth much less hazardous and after the tenth pretty fair.

OUR FINAL POINT—CAUSE OF DEATH:

People with tuberculosis die of tuberculosis (see Study 7). Only 5.6% or 1/18 died of anything else. This is so conclusive that we need not go further. Considering the erroneous causes of death often given on certificates and the motives which might dictate certification from causes other than tuberculosis (Framingham 22%, Monograph No. 3, page 41), one might say that practically all cases of tuberculosis die of it eventually.

We have then an answer to our first question. Anyone who wants to take the trouble of reference to the originals of the studies used here today can get a crude rating on any tuberculous individual or group, but it is well to remember it will be far worse than any he will have occasion to use.

Our next question was, "What are these people sick with meanwhile and how much?" When we come to this study of morbidity a much more difficult problem is presented. It is generally conceded that a temporary recovery or near recovery is obtained in a large proportion of the early cases by suitable treatment and even in a considerable number of the far advanced, improvement which may be thought to be recovery occurs. Just how temporary it is the mortality statistics prove. Early relapse is common and in the advanced cases in general it is doubtful if any time in excess of the duration of treatment is added to life. This presents a situation which forces us to draw a line somewhere after the attack where we begin to figure morbidity for practical purposes. The studies already cited as to arrested cases, the large number of deaths within a few years of incipient sputum

negative cases, the best of the material, let alone the total deaths, indicate that at first morbidity like mortality can only be defined as very great, despite the stage or condition on discharge. It is evident that at this period we are dealing with a conglomerate mass of bad risks and any attempt to dip down into this and pick reasonably insurable cases is, I believe, hopeless, irrespective of data and classifications. Nor does it seem that we have criteria which even in the individual cases are not apt to be negatived by the uncertainties of the first five and especially for the reasons given of the first two years.

The lesson from the mortality statistics is that to draw our line at less than five years post treatment is equivalent to guessing, as these five years from the beginning, or better, the end of treatment, are years of progressive illness on the part of a large fraction and of relapsing illness of another large fraction, both with fatal termination. Some of the cases at the end of treatment will still be in the course of their attack, others recovered, and it would be better in all instances to date our five-year period on the basis, if possible, of end of the last attack, exacerbation or evident activity. At best, information on which to base prognosis is difficult to obtain; add to this the uncertainty of prognosis with the fullest information available, it seems to me hardly a matter for dispute that we must wait until the situation clarifies itself so judgment can be exercised and five years appears the earliest date at which this can be done.

There are three elements to be considered as a morbidity, and the first is that these people will be sick with what they die of. We know that within 20 years they die almost without exception of tuberculosis and that reduces this particular problem to "how long does it take a person to die of tuberculosis?" Death may occur instantaneously in this disease even in persons not previously ill, from hemorrhage. This is very rare. Other causes of sudden death are still less

common. It may occur in a few days following a spontaneous pneumothorax or other complication, in a somewhat longer period still calculated in days from meningitis, in a few weeks from a general miliary tuberculosis, from this to a few months in the pneumonic forms, but usually is a long drawn out process with perhaps one of these conditions as the final event, but most often asthenia as the essential state. This subject has been pretty thoroughly thrashed out, not only by medical men, but by economists and socialogists, so that we have a good deal of information about it. There is an old tradition that consumption is a seven-year disease. As early cases were probably seldom recognized in days gone by except by hemorrhage, it is fair to assume the true average is longer. Some serious attempts of late to define this point lead to conclusions as to total length approximating this tradition. Edw. R. Baldwin, on the other hand, extends it considerably, estimating an average duration for first stage of eight years, second, five to six, and third, over four years or a total of seventeen to eighteen years (National Tuberculosis Association Transactions, 1912). However this may be, the best information available as to the terminal state which is much more accurate and based on large hospital and other material over long years, indicates eighteen months as a fair average. Irving Fisher, quoting Price's Maryland studies and the Boston Consumptives' Hospital experience, comes to this conclusion. In addition to it he calculates an immediately antecedent 18 months of partial disability or illness. Easton, from a study of the Metropolitan Hospital, New York City records, arrived at a figure of 3 1/2 years partial and total disability. As against these estimates Biggs gives 270 days as spent awaiting death in institutions, and McSweeney, from a Massachusetts Commission investigation, states 110 days as the average number (all these from the National Tuberculosis Association Transactions, 1912). Locke says (National Tuberculosis Association Transactions, 1911) that only

13% of the working class passed, because of necessity, through the period of partial disability. By this they may have intensified and shortened the actual terminal period just as those who take appropriate treatment lengthen it to some extent, but you will notice in Study 2 that although Bardswell's male advanced group took just 18 months to die, some of them, though better class people, worked a fraction of the time. All in all, matching the cases of sudden or rapid death against those who would have to be classed as ill, not only for the actual terminal period but the preceding partially disabled period or a fraction of it together with another large group who while perhaps not ill in the strict sense of the term would be at their own or the public expense taking treatment and, therefore, incapacitated, I think we can accept Fisher's figure. What influence insurance might exert is problematical. If premiums had to be met there would be a motive for shortening the disability period, if a policy carried a waiver clause the contrary would obtain and if sickness benefits were payable not only would this be so but the benefits might even be spent in lengthening it. As perhaps a compensation, the date of death would be delayed. There appears no reason to make a distinction on this score between those who die early, say in the first five years or at a later date. That is, it is not indicated that it takes them any different time to die because they live longer. This figure then or whatever is the correct figure is probably more generally applicable to *all* cases than any other and should be a fixed quantity in *all* calculations. Even a small group would probably conform to it. How the duration of this final illness compares with the average duration of all final illnesses is of interest. No worth while studies are available. In a British Parliamentary Select Committee report which made two exhaustive studies on death certificates in 1893, one witness testified that this item might as well be omitted it was so nearly worthless. Our own Federal Bureau of the Census

in a pamphlet entitled "Modes of Statement of Cause of Death and Duration of Illness" ignores in the text the last half of the title, and in a recent letter the chief statistician for Vital Statistics tells me "it is not generally stated on the certificates so that compilation is not warranted." Our New York City Health Department has no information on the subject. In the annual reports of the latter, however, some 38 "principal causes of death" are tabulated. Only eight of them are at all comparable to tuberculosis and a large fraction of the mortality is made up of pneumonia, surgical conditions, contagions and sudden death with an average of very short duration. The eight causes noted are cancer, organic heart disease, chronic bronchitis, other respiratory diseases, diseases of the stomach other than cancer, cirrhosis of the liver, Bright's disease and old age. Even if we add to this list some other conditions commonly encountered and not included in it, for example insanity, organic nervous disease, chronic rheumatism and rheumatoid arthritis, it is probable that the terminal period of disability is as long in tuberculosis as in any, longer than in all but a few and out of all relation to the greater number. The second element in morbidity which we must consider is that of exacerbations or relapses of the person's tuberculosis which end in recovery. Though I have given more thought and effort to obtaining some reliable statistics on this point than to any other, I have been able to get in a review of the literature, recent and old, and in an extensive correspondence with men in tuberculosis work, very little of value. Even the statistical offices at Loomis and Trudeau have nothing. Several sickness surveys in whole populations have been made and give much carefully collected and analyzed information (Metropolitan Life, S. C. A. A., North Carolina, Sydenstricker, U. S. P. H. S.), but not what we want. There are centers for post-sanatorium training and rehabilitation and colonies for the tuberculosis (Altro, Sir Robert Philips), but their cases are too recently ill to serve

our purpose. There are sickness statistics from sick benefit funds, but these are dependent in such large measure on fixed terms or amounts of benefits as to be useless (A. T. & T. Co., E. B. F. figures and Industrial Morbidities in U. S. P. H. reports). There is a large fund of information being accumulated in our own Veterans Bureau and the English Ministry of Pensions, but again the material is still too recent to be of use. The Framingham publications don't give it. Even our friend, Dublin, of the Metropolitan, who has analyzed everything, says in one of his publications that he hasn't it. Perhaps, like the story of the blind horse, it's a secret.

In about 10% of 953 cases observed in the New York Telephone Company in a period of seven years the disease was steadily progressive from onset. In Framingham the percentage was somewhat higher but the natural course of most tuberculosis is known to be by a series of exacerbations and remissions. I think it is far less generally appreciated that these episodes are not regularly or continually recurring phenomena of the disease throughout its duration, but on the contrary that there is a tendency to stabilization. In about one-half of the cases the stabilization is by death within a few years after definite clinical symptoms appear, and in the other half in a prolonged term of relative good health. In those who die within these few years relapse comes early and the state is soon that of terminal illness. In those who live for the longer periods the relapses up to the final one are so far as I can determine few and of rather short duration until they too come to a relapse from which they do not recover. The intermediate ones, if any occur, are not necessarily nor even in the rule progressively more severe or of greater length. This is only my opinion but it is based on a large experience in the past twenty years and some other men in this work for a long time tell me that they share it. The reason may be in some constant or varying thing in the essential makeup

of the individual or the quality of the disease he harbors or the reaction between them or it may be the direct result of intelligent action on his part. The large mortality within five years in even the early cases which have taken sanatorium treatment and the unity of results in large groups from different ends of the social scale would seem to give a fatalistic interpretation—that we were dealing with something only slightly if at all within our present known control. On the other hand, the favorable immediate effect of treatment in almost all cases and the fact that this effect continues in a large proportion even after this influence ceases to operate, points to an opposite conclusion or a combination of the two applicable at least to those who survive the first onslaught. So that we can think of this type of consumptive as having a realization of the wisdom of taking care of himself, doing so by making modifications in his whole scheme of life and daily routine, so that while he may seem to others to be engaged in the usual activities of a normal person, yet in the sum total of the demands he makes upon himself and the compensations he provides so adjusting matters that he lives within his limitations. One can see the same thing in other large classes, notably cardiacs. The mortality figures indicate that by the tenth year our consumptive group is made up almost entirely of such persons, who can apparently control their own destiny in large measure—after the fifth year they constitute the major fraction. Insofar as we deal with the leftovers from the earlier period, or those handicapped by the adverse factors noted above and previously, our experience will be unsatisfactory. Most of the exacerbations which end in recovery while usually periods of illness, so far as earning capacity or claim to benefits is concerned, are (again in my opinion) of less than three months' duration. I believe they rarely exceed six months. Beyond this we are dealing with terminal relapses. Aside from the medical facts we must consider other influences. Most consumptives know that

having had warning of trouble they do well to guard against unpleasant eventualities and that the chief indication is rest. They also know that while, say one month, so spent may be enough to get them by, more time would be beneficial. There are energetic persons who will always limit the rest period to what is absolutely necessary, and timid ones who will always take more, but in most cases material considerations will play a large part in or control the decision. If there are benefits payable sufficiently large or with other means sufficient to match losses from earnings, or to leave a balance above necessities; if the necessary rest period has already run to the end of the waiting period, or if there is no employment or suitable opening must be awaited, we have a set up which would most likely lead to an optional prolonging of the disability. Tuberculosis propaganda takes much of the sting of reproach from this kind of loafing and even applauds it. There is, too, a small class who, so long as they can live thereby in a fair personal comfort without effort, are willing to exploit their disease and are unmindful of even the most solemn and fundamental obligations to themselves and others. Others again will surreptitiously engage in gainful activities while claiming disability. But by and large because of the essential character of the relapses, the waiting period for benefits and the considerable amount of insurance which must be carried before these become more than partial compensations for losses, I doubt if these intercurrent relapses are of much consequence except to the patient. While the figures in the studies you have in your hands serve our purpose very well for mortalities, we must draw our morbidity inferences from them by picking facts here and there and making deductions. As the far advanced cases have well nigh all been eliminated by the fifth year only the data concerning the other two classes is of interest. There are numerous references to state of health. In Study One we find 87% able to work of all living one to twenty-three years later; in Study Two

a distinction is made between those only alive and those well, and there is considerable detail by classes of cases by years and amount of work done, as well as a note to show the proportion not working yet perfectly well. Study Three also tells us not only that the patients are alive, but well. Study 6 tabulates the fit for work separately as does Study 8. Study 9 actually states what percentage are working and Study 12 gives interesting facts on this head. There is a great deal more such information in these studies not shown in the extracts and much more has been published from other sources. This is not directly workable data from which to figure the number and length of relapses and whether we are dealing with terminal or intercurrent ones. To do so we should have other information regarding the individual and a consecutive detailed record of his states of health. No distinction is even made between tuberculous and non-tuberculous disability, so I did not think it worth while to burden you with an analysis of it. On the whole my own study of this data does not develop any contradiction of what I have set down and taken in connection with such studies as those of the Health Insurance Commissions of Illinois, Ohio, Pennsylvania and Connecticut (Lapp, National Tuberculosis Association Transactions, 1919), which indicate a disability illness of over seven days annually in 20% of the industrial population, they confirm my impression as to the comparative infrequency and short term of relapses in the cases after five years. If this were not so and a large amount of lost time were added to that lost by the general population because of other sicknesses, it would not seem possible that as good a showing would be made. The amount of lost time because of tuberculosis in these general population figures is, however, not shown separately, though this has been studied elsewhere and the rates are doubtless applicable here. On the other hand, we cannot absolutely exclude intercurrent relapse as a serious matter if we take ability to work as

shown in these studies as the same thing as freedom from tuberculous symptoms and vice versa for either intercurrent not terminal relapses would account for a great deal of disability, or our death rates in the second and third five-year periods would be higher than they are. This does not necessarily mean, though, that the separate relapses would run over three months each, though the aggregate lost time might be large. So much for morbidity due to tuberculosis which is illness to which other risks are not liable except insofar as they develop tuberculosis and then they will be worse, for the group we have been considering have their initial treatment period behind them and apparently they never again go through so long a disability until they die. Our third and final element of morbidity is all other illnesses to which all persons are exposed and the question here is whether persons with tuberculosis have less or more or the same amount of these as do comparable non-tuberculosis persons, and if there are certain diseases to which they are unusually susceptible or immune. Ames (34th Annual Report, Trudeau Sanatorium) found less other sickness in Saranac Lake, a distinctly tuberculous community, than in comparable places. Study 7 lists 48 cases in the 574 about whom details were obtained (from the grand total of 959) who had concomitant non-tuberculosis diseases or complications. Perhaps there were others not recorded but this seems very few, and two or three were other pulmonary troubles, ten nephritis and one meningitis. The great bulk of these cases died a lingering death. Annual reports of many of the sanatoria carry detailed lists of complications noted, and in general it is striking how few the total is in comparison to the whole number of cases treated. My own experience in two large institutions from some years led to the same observation and it was often remarked upon by members of the staff. Elderton and Perry (Study 1) thought they saw an indication of this same thing when making their study. The Denver Sana-

torium Association Committee, in its study of deaths from tuberculosis in Colorado for 13 years (American Review of Tuberculosis, August, 1923), gives as 1 to 3 the percentage of deaths in the different years of cases associated with the principal complicating conditions of which there were only four, two of which were influenza and pneumonia or likely as not simply tuberculosis and not complications at all. They note that complications had no numerical importance. There are some tuberculous complications which should rather be classed with this element of morbidity than with the relapses such as fistula in ano, but they do not involve much disability. The subject has been much discussed, many physicians holding to the opinion that because of their sheltered, quiet hygienic lives consumptives escape much other illness and accident. In a recent extensive correspondence I received many such opinions. Doctor F. M. Pottenger wrote, "I do believe that many because of living a more careful life avoid many of the difficulties that occur to people in general." His reply is fairly typical of most. To be sure, these physicians are practicing in health resorts and amongst actually sick consumptives to whom under such conditions this would particularly apply, and they might form erroneous impressions or even if correct the same state of affairs might not be true of the recovered cases living more normal lives, but as has been said by a prominent statistician, convergence of opinion is our chief reliance in the pursuit of facts, and these physicians are interested in and experienced in this particular problem. All in all, what evidence is available points to the tuberculous individual certainly showing no unusual morbidity from other diseases and most likely less than the average of the general population or insurance group in which he would be classed. One man of wide experience in this field remarked to me that if you could exclude payments for tuberculosis you could very profitably sell health insurance to consumptives.

To summarize:

Morbidity in cases of tuberculosis is so excessive in the first few years after treatment as not to be practically calculable either as to groups or individuals.

After the fifth year the long terminal illness of those who die is the essential element of morbidity.

Intercurrent relapse is not an important factor.

Illness from causes other than tuberculosis is less than the average.

The total excess morbidity of this group can be expressed as the product of their excess mortality multiplied by the factor how much 18 months exceeds the general average of terminal illnesses. I doubt very much if in general your companies will be called upon to pay anything beyond this on insurance health clauses.

We come now to our last question, "Should any recovered tuberculosis case be accepted for insurance—if so, which and on what terms?"

There are three different tuberculosis groups from an insurance standpoint. Those known to have tuberculosis when insured who will run true to calculation; those having it but not so known when insured who will give the same result with a disadvantage to the company because of the rating given them; and those not having tuberculosis when insured but developing it later, who are another story. These latter will give a bad mortality and 90% of them at least (see note *re* 10% steady progressives) will give a very bad morbidity experience. This distinction should be kept in mind when forming impressions as to the unfavorable influence of tuberculosis so that we will think straight about insuring recovered cases and if we conclude to do so, give these cases the ratings to which they are entitled. After all, despite what has been said of the deaths, 74.3% of the first and second stage cases would still be alive 20 to 39 years later as shown by

our best and largest Statistic Study! I know you gentlemen think much more clearly in these matters than most of the profession, but in conversation with some of my medical insurance friends I have gotten the impression that there is some confusion on this score. As a mere matter of mathematics, using the studies in full which I have presented in abstract today as mortality tables, one could insure all recovered cases with the usual loadings and make money. As a practical matter, the insurance would not be saleable. Using the same tables, but limiting the acceptances to those five years or more after recovery, probably a good deal of business could be done. Holding to this limitation and exercising in addition careful selection we have a group probably just as desirable as any other sub-standards and possibly better. In tuberculosis one is dealing with a known uniformly bad quantity as presented by the far advanced cases with negligible exceptions and an unknown quantity as regards other cases from which it is apparently possible to select good risks.

The usual advantage of forms other than straight or term policies of course applies.

Elapsed time since recovery is the keystone. No case should be accepted under five years from date of recovery, seven is far better, and after ten years we rapidly approach the general run of risks. Date of recovery being meant in relation to the last previous active manifestation. To be sure this may be hard to fix and the subject himself may in all honesty make a false statement, for a period of activity may be merely a temporary, slightly disturbing illness not thought to be of any importance or related to his tuberculosis, or again if suspected as such so uncertain that experts may disagree about it and from this on through every shade of severity until we came to cases so serious that early death is one of the surest things in medical prognosis. The criteria mentioned in the following section on selection will be helpful in reaching a decision. There are two classes that one may

think of as exceptions to the five-year rule—first, the early sputum negatives. They are insurable but hardly at an attractive figure for the best experience shown by our tables in this class is 13% and mostly about 20% mortality at five years and I doubt if you can pick the good ones. Certainly if they are to be insured they should be in a class by themselves and not drag down the other over five years recovered tbs. who are entitled to a better rating as they do not carry this added risk. The other class that we might think of as exceptions to the five-year rule are cases whose disease was manifest some years previously and who made a good recovery but have given some evidence, perhaps slight, of activity within a lesser period than five years and are now in prime condition. From what I have said of morbidity, these cases are entitled to more consideration than those in the initial five-year period, but the more we take figures rather than assumptions as our guide the less desirable they are. Selection requires more consideration and here I hope you will not think it presumptuous for one outside your fold to make a plea for more careful determination in all applicants of the existence of the tuberculosis factor.

Study Ten, judged by the other studies, represents early and moderately advanced tuberculosis. Perfection will not be attained. To get histories of even all broken legs would likely be impossible and in so seemingly simple a matter as typhoid there is omission, error in inclusion and sophistication. The percentage of tuberculosis which will develop in a given group in whom by history or history and examination it is not supposed to exist, is familiar to you and seems to be accepted as inevitable. Nor is it possible within practical limitations to exclude all. You doubtless accept some such cases as preferred risks and in our work in the Telephone Company we have a certain number who develop tuberculosis which should have been detected within a short term of employment, despite examination about the equivalent of yours.

But it seems as if an effort to improve this situation would be worth while not only for the mere sake of having things right but to improve the ratings of both the tuberculous and non-tuberculous groups. Much of the unpleasant experience with the third class I mentioned at the beginning of this section might thus be avoided.

It is significant that in the Framingham demonstration (Monograph No. 5) it is stated that 50% of the arrested cases found while presenting definite signs of arrested disease had never had a diagnosis of active tuberculosis in the past.

But to return to our present concern, if lapse of time since recovery determines what risks can be profitably considered, selection just as much determines which can be accepted. If you aim to do a successful business in this field you must treat the cases in a special manner. The hazard is too great to merely trust to numbers for safety for with each widening of the circle you are probably including all worse risks in geometrical progression, and you not only must work within the limitations of attractive price but in fairness should do so. The pitfalls in the situation are obvious but it is by no means hopeless. All one aims to set up is a workable working program. The basic things which determine low mortality and morbidity are the criteria by which we judge insurance risks. After five years the advanced cases are practically eliminated, and those who remain if they apply for insurance consist of those whom we ought to detect and some very early or uncertain ones who may be overlooked. If overlooked because of lack of history, and they qualify as present good risks, they involve the least bad selection as they approach nearest to the non-tuberculous. In seeking to uncover a history of tuberculosis or if known, gather details regarding it, much information can be had by skilled indirect questioning whether the applicant is ignorant of its meaning or deliberately conceals facts. For instance, the occupations followed, vacations taken and where, and changing place of

residence will disclose as much or more than frank complete answers to direct questions. The course of pregnancies and lactations is also useful. If the case is known or suspected to have had tuberculosis, not only should a special examination be made as is now commonly done, but special data should be obtained and the appraisal be set by a specialist on your staff. I do not think that one can be satisfied with the idea that there are limitations in insurance work as to sources, completeness and reliability of information and what is more often overlooked, much incompetence or carelessness on the part of those asking questions or making examinations. When information which can or should be forthcoming is not given, the case cannot be properly considered. The anatomical extent of the disease or classification by stage may be impossible to obtain but one can usually find out how sick the patient was by the amount of confinement to bed and physical restriction imposed as well as by the items just noted.

When it comes to valuing the present state the situation is much like that of a physician making a prognosis for an individual patient to whose case group statistics have no direct application. The points on which a physician would base a prognosis are these: The age when ill; the severity of disease experienced, especially as measured by constitutional disturbance, very particularly whether tubercle bacilli were or were not ever found and the last known time; the duration of treatment and apparent result obtained; whether the case was a straight one illness type or relapsing over a period of years, with their character; duration and date of last, the present condition, especially as to weight and pulse rate and gastro-intestinal makeup; the material circumstances and occupation, the type of person; whether high-strung or placid and if intelligent and careful. Rapid pulse is always unfavorable, a hearty appetite and good digestive apparatus an asset. Stability of weight is important. Many of these cases are brought to new higher standards of weight by their initial treatment,

which they retain in large measure thereafter. An intense hard working executive recovered from tuberculosis is a poor risk compared to a quiet, thrifty man of much smaller means. There is an old saying that you can't cure a fool of tuberculosis. You can't keep him well of it either. If you insure sports you too become gamblers. For intercurrent disease or operation, opinion must be based on actual effects observed; there seem no safe generalizations.

Many perfectly well recovered cases of tuberculosis are misjudged because of the general impression of lack of vigor they make. It has always seemed to me that this was rather superficial and while perhaps reflecting in some measure a permanent lower fatigue ability and perhaps some dyspnoea, came more from their habit of engaging less in the outdoor pastimes so common nowadays, especially amongst those who are conscious of the necessity of active measures to keep their weights and abdomens within control. As a factor in mortality and especially in morbidity, country or village life is probably important, though I have no study to offer on this point. It is a matter of common experience, however, that the rural and especially the hill countries adjacent to our large eastern cities are full of recovered consumptives apparently leading normal lives for long periods, probably dependent on the time factors of place and general mode of life. The economic bearing of tuberculosis as measured in ability to get or hold a job because of ill health or attitude towards work in conserving health has, I think, little or any bearing other than as already covered under morbidity.

Good and sufficient treatment tends to carry over the poorer risks into later years, but probably on the whole has compensating advantages.

I have seen several private patients who came to me with tuberculosis, who were offered additional insurance, in one case of ten thousand dollars without examination. Two of these came because of reactivation of old disease, though

they held standard policies written within two years. Such action strikes me as betting, not insurance.

To summarize:

The results obtained in properly rated recovered tuberculosis cases insured should not be confused with other costs of tuberculosis.

More effort should be made to insure proper classification.

Successful rating depends on elapsed time since recovery and careful selection.

So selected recovered tuberculosis cases are good substandard risks and often better.

The usual preferences as to choice of form of policy apply.

Five years should be the minimum elapsed time since recovery.

Selection requires special talent in obtaining information, making examination and rating risk.

The criteria of rating are the same as to history, health and personality as are valid for medical prognosis.

The basis for premium waiver and sickness clauses is the excess morbidity noted in last section.

There was in the past a fixed pessimism about consumption. In the popular mind its place has been taken by a not altogether justified reverse optimism, but it has some truth in it and if we get at this as I have attempted to in answering the first two questions, we have a starting point. General practice about tuberculosis is improving with added knowledge so that fewer cases are appearing. The existing ones probably live longer and are less sick and for shorter periods than formerly. So long as general prosperity lasts and we enjoy freedom from any great epidemics, this trend will continue.

INDEX TO TOPICS IN STUDIES

A General figures as to mortality
B Stage of disease
C Sex
D Age
E Elapsed years to death

F Condition on discharge from treatment
G Presence or absence of tubercle bacilli or hemorrhage
H Expectancies and ratios to comparable groups general population
I Ability to work
K Result of after care—choice of occupation
L Cause of death
M Experience with probably tuberculosis insured persons
N Ex-service men—effect of ample finances
O Non-sanatorium cases
P Industrial applicants

TERMS USED TO CLASSIFY CASES

Minimal or incipient or first stage	1
Advanced or moderately advanced or intermediate or second stage	2
Far advanced or third stage	3

STUDY 1

A—B—D—E

Heise and Brown—Tubercle, February, 1925

The present condition of patients discharged from the Trudeau Sanatorium. Covers 5915 patients discharged from 1885 to 1922 from reports received in 1924. This is the total number of cases discharged from the sanatorium for this period, less only 319 others who could not be traced.

Table III
Condition of Patients Discharged 1885-1923 From Reports of 1924

	Condition	Discharged 1885-1904	Discharged 1905-1915	Discharged 1916-1923	Total
Minimal 1512	Alive	278	629	260	1167 or 77%
	Age*	12-56-27	11-51-27.8	17-56-28.9	
	Died of tuberculosis	104	76	15	195
	Age	15-51-26	17-42-26	18-49-28.2	
	Died of other causes	38	46	10	94
	Age	14-50-28	15-47-27	19-37-28.9	
	Died, cause unknown	43	11	2	56
	Age	15-52-26	19-61-29.7	26-34-30	
Moderately advanced 345.3	Alive	257	735	906	1898 or 55%
	Age	13-45-27.5	15-62-29.8	15-61-28.6	
	Died of tuberculosis	617	391	148	1156
	Age	15-56-28	16-52-28.1	15-59-28.1	
	Died of other causes	80	83	19	182
	Age	16-61-32.5	14-57-30.6	19-44-28.3	
	Died, cause unknown	173	22	22	217
	Age	14-57-27.4	16-48-27	19-46-29	

Far advanced 513	Alive	8	13	132	153 or 30%
	Age	16-36-28.5	22-48-34.4	16-55-29.9	
	Died of tuberculosis	191	33	66	290
	Age	14-50-26.6	17-54-32.2	16-61-29.1	
	Died of other causes	7	1	8	16
	Age	26-43-35	28	19-56-29.9	
	Died, cause unknown	47	1	6	54
	Age	16-46-25.4	28	21-52-33.8	
Suspected & non tuberc.	Alive	7	33	363	403
	Dead	9	11	14	34
		1 of tuberculosis		1 of tuberculosis	
Untraced 319	Non-tuberculosis	5	1	15	319
	Minimal	69	37	7	
	Moderately advanced	113	29	23	
	Far advanced	18	0	2	
	Total	1064	2152	2018	6234
	Age	12-61-27.6	11-62-28.8	15-61-28.8	11-62-27.2

*Minimal-maximum-average

STUDY 1

B—E

Group 20 to 39 years elapsed

Stage		
Alive (1)	278	or 60.3%
(2)	257	23.0%
(3)	8	3.0%—mortality 97%
?	7	43.75%

550 from 1869 omitting untraced = 29.6

Considering only first two stages 74.3% alive

Group 9 to 19 years elapsed

Alive (1)	629	or 82.7%
(2)	735	60.0%
(3)	13	27.0%—mortality 73%
?	33	80.0%

1410 from 2085 = 67.6%

Considering only first two stages 68.43% alive

Group 1 to 8 years elapsed

Alive (1)	260	or 90.6%
(2)	906	83.0%
(3)	132	62.0%—mortality 38%
	363	96.28%

1661 from 1971 = 84.27

Considering only first and second stages 84.37% alive

STUDY 1

E

Time of Death—Per Cent Whole Number of Deaths
Deaths From Tuberculosis Only

Years elapsed	0-2	0-4	
Minimal	19	43	1st group
	32	49	2nd "
	53	87	3rd "
	27	49	Total
Moderately advanced	47	67	1st group
	43	65	2nd "
	59	84	3rd "
	47	68	Total
Far advanced	74	82	1st group
	67	85	2nd "
	82	91	3rd "
	75	84	Total

1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0

Within 5 years:
Minimal 60% approx.
Mod. advanced 75%
Far advanced 90%
} of all deaths noted had occurred.

STUDY 1

H

Expectancies

Calculated by Brown and Pope—Using Farrs' English Tables
In 1904 of 1157 cases treated 1885 to 1901
Apparently cured (app. arrested) 93% of normal for one to ten years
Arrested (quiescent) 65%
Active (improved—not improved) 23%
Death rate of apparently cured—three times for 1st to 10th years
arrested ten to fifteen, then less to 10th year
active 50% actual 1st 2 years
1908—2244 cases after 5-10-15 years

Table 1.—Showing the Number per 1000 Living

	In 5 yrs.	In 10 yrs.	In 15 yrs.
General public	951	898	841
Apparently cured (now app. arrested)	896	774	748
Arrested (now quiescent)	596	421	351
Active (improved, unimproved)	236	138	85

Table 2.—Showing Percentage of Normal Expectancy of Life

Apparently cured (apparently arrested)	94	86	89
Arrested (quiescent)	63	49	46
Active (improved, unimproved)	25	15	10

Death rates apparently cured twice, later three times.
After 8-10 years lessened.
arrested 10 times in 3rd year, falls steadily.
active 40 times, but equals arrested after 8-10 years.

STUDY 1

B—C—D—E—G—H

Elderton and Perry

A fourth study of tuberculosis mortality—University of London —University College—Department of Applied Statistics—Drapers Co. Research Memorial Studies No. 8—Studies in National Deterioration. This is based on same material as used by Heise and Brown, using English Life Table #6 for expectancies.

Summary Table

Class	No. of Years Since Admission								
	0-3			4-7			8 and Over		
Deaths	Actual	Expec.	Ratio	Actual	Expec.	Ratio	Actual	Expec.	Ratio
Incipient									
Male	30	8.2	3.6	23	6.2	3.7	9	2.6	3.5
Female	17	7.8	2.2	17	5.9	2.8	4	2.8	1.4
Both	47	16	2.9	40	12.1	3.3	13	5.4	2.4
Advanced									
Male	164	15	10.9	95	8.9	10.7	16	3.5	4.6
Female	143	11.4	12.5	71	7.4	9.6	16	3.3	4.8
Both	307	26.4	11.6	166	16.3	10.2	32	6.8	4.7
Far advanced									
Male	47	1.1	43	5	.25	20	2	.15	13
Female	32	.7	46	7	.15	47	—	.01	—
Both	79	1.8	44	12	.4	30	2	.16	12.5

Errors of lower mortality in more recent group and life table used.

Conclusions

A Mortality much higher than general population (which includes tuberculosis).

B For incipients about four times as high. For male incipients tuberculosis adds 40 years to the risk at 23 years of age, i. e., mortality of 63 years. In the 28-32 year group, it adds 19 years. At 33 and over it adds 7 or 8 years. For females the addition is about 22 years up to 33 and 7 thereafter.

F For apparently cured about twice as high as normal.

G In general the advantage to the negative cases as against the positives is 4 1/2 to 12 times. Hemorrhage gives a poorer expectancy.

STUDY 1

Ability to Work

I

Brown 1908

Of all discharged cases 41% one to twenty-three years later
" " living " 87.5% " " " " "

STUDY 2

A—B—E—F—I

Noel D. Bardswell

The expectation of life of the consumptive after sanatorium treatment. Oxford Medical Publications 1910. A study of 241 cases discharged in 1901 to 1905, on admission, on discharge and their condition in 1909.

Condition (A) on Admission, (B) on Discharge, and (C) in 1909 of 241 Cases Discharged in 1901 to 1905

Condition on Admission	Condition on Discharge	Condition in 1909	Discharged During the Year					Total
			1901	1902	1903	1904	1905	
		Well	5	8	11	4	2	30
	Apparently cured	Living	—	—	—	—	—	—
		Dead	4	—	1	—	—	5
		Unknown	1	—	1	—	—	2

Incipient, 62, 25.6 per cent	Disease arrested	Well	1	4	3	7	1	16
		Living	—	—	1	—	—	1
		Dead	—	3	1	—	1	5
		Unknown	1	—	1	—	—	2
	Disease active	Well	—	—	—	—	—	—
		Living	—	—	—	—	—	—
		Dead	—	—	1	—	—	1
		Unknown	—	—	—	—	—	—
	Died in sanatorium		—	—	—	—	—	—
	Apparently cured	Well	1	1	—	5	1	8
		Living	—	—	1	—	—	1
		Dead	—	—	—	—	—	—
		Unknown	—	—	—	—	—	—
Moderately advanced, 95, 39.4 per cent	Disease arrested	Well	9	8	11	7	4	39
		Living	1	3	3	2	—	9
		Dead	12	4	8	2	2	28
		Unknown	3	—	—	—	—	3
	Disease active	Well	—	—	—	—	—	—
		Living	—	—	—	—	—	—
		Dead	1	3	2	—	—	6
		Unknown	—	—	—	—	—	—
	Died in sanatorium		—	1	—	—	—	1
Far advanced, 84, 35 per cent	Disease arrested	Well	3	1	—	2	—	6
		Living	—	1	2	1	—	4
		Dead	15	10	8	3	3	39
		Unknown	—	—	—	—	—	—
	Disease active	Well	—	—	—	—	—	—
		Living	—	—	—	—	—	—
		Dead	6	7	2	1	1	17
		Unknown	—	—	—	—	—	—
	Died in sanatorium		12	2	2	—	2	18
		Summary						
		Well	19	22	25	25	8	99
		Living	1	4	7	3	—	15
		Dead	38	27	23	6	7	101
		Unknown	5	—	2	—	—	7
	Died in sanatorium		12	3	2	—	2	19
	Total		75	56	59	34	17	241

STUDY 2

B

4 to 9 years elapsed

Stage		
Alive (1)	47	or 75.9%
(2)	57	60.0%
(3)	10	11.9%

114 from 234 omitting untraced = 48.51%
Considering only 1st and 2nd stages = 69.33% alive

STUDY 2

A—B—E

Time of Death—All Causes

Table Showing the Mortality Amongst 111 Patients (Incipient Cases, 25; Moderately Advanced Cases, 43; and Far Advanced Cases, 43) Discharged During the Years 1901 and 1902

TAKE IN DIAGRAM

Incipient 3 to 5% annually.
Far advanced 3% after 4 years.
Of incipients 9 of 11 deaths occurred within 5 years.
Of moderately advanced 30 of 35 deaths occurred within 5 years (average 26 months).
Of far advanced 71 of 74 deaths occurred within 5 years.

STUDY 2

H

Expectancies and Ratios

	Actual Number of Deaths	Expected No. of Deaths
Incipient cases		
Males	8	1.9
Females	3	0.8
Moderately advanced cases		
Males	24	3.4
Females	10	1.0
Far advanced cases		
Males	46	1.1
Females	29	0.9

Taking all the cases of which particulars are given, we have:

	Actual Number of Deaths	Expected No. of Deaths
Males	78	6.5
Females	42	2.6

If we only take the cases which are described as discharged with the disease "apparently cured" or "arrested," the following figures result:

	Actual Number of Deaths	Expected No. of Deaths
Males	14	4.3
Females	4	1.2

STUDY 2

Ability to Work

I

Year of Discharge	No. Discharged	Number Known to be Well or at Work on 1st January of Each Year Since Discharge								Percentage Well or at Work in October, '09
		1902	1903	1904	1905	1906	1907	1908	1909	
Incipient Cases										
1901	10	10	10	10	9	9	8	7	6	60
1902	15	—	15	14	14	14	13	13	12	80
1903	18	—	—	17	15	15	14	14	14	77
1904	11	—	—	—	11	11	11	11	11	100
1905	4	—	—	—	—	4	3	3	3	75
	58									
Moderately Advanced Cases										
1901	24	23	17	14	11	10	10	10	10	41.6
1902	19	—	16	13	13	12	12	11	10	52.6
1903	25	—	—	21	18	13	13	13	11	44
1904	16	—	—	—	14	14	13	13	12	75
1905	7	—	—	—	—	7	7	5	5	71.4
	91									
Incipient and Moderately Advanced Cases										
1901	34	33	27	24	20	19	18	17	16	47
1902	34	—	31	27	27	26	25	24	22	64.7
1903	43	—	—	38	33	28	27	27	25	58.1
1904	27	—	—	—	25	25	24	24	23	85.1
1905	11	—	—	—	—	11	10	8	8	72.7
	149									

Type of Case	Doing Full Work	At Work, but Shorter Hrs. Well	At Work, but Shorter Hrs. Alive	Have Given up Work Well	Have Given up Work Alive	Dead Worked (After Discharge)	Dead Never Worked
Incip. No. of Cases = 39	23 or 59%	4 or 10.2%	—	4 or 10.2%	—	4 or 10.2%	4 or 10.2%
Mod. Advanced No. of Cases = 69	22 or 32%	3 or 4.3%	2 or 3%	12 or 17.3%	5 or 7.2%	8 or 11.6%	17 or 25%
Total	45 or 42.5%	7 or 6.5%	2 or 1.8%	16 or 14.8%	5 or 4.6%	12 or 11.1%	21 or 19.4%

It will be seen that no less than 19% of these patients did not work at all after discharge, and that 11% only worked for a time, the period varying from 6 months to 6 years. Of the remaining 70% who are alive, 43% are at full work, 8% are working shorter hours and 19% have done no work. 15% of the last 19% are perfectly well but are able to live comfortably without returning to their original occupations.

STUDY 2

I

Far Advanced Cases That Have Died After Leaving Sanatorium
74 From a Total of 84
Period of Discharge 1901-1905, Date of Report 1909

Men

Occupation	Lived for	Worked for
Organist	4 years and 5 months	4 years and 5 months
Bank Clerk	1 year and 10 months	1 year and 6 months
In business	10 months	8 months
Revenue officer	10 months	7 months
In business	8 months	6 months
In business	7 months	6 months
In business	6¾ years	Nil
Solicitor	3¾ years	"
Captain in the army	3¾ years	"
Major in the army	2¾ years	"
Undergraduate	2 years	"
Colonel in the army	1 year and 9 months	"
Bank clerk	1 year and 9 months	"
Solicitor	1 year and 9 months	"
Clerk	1 year and 6 months	"
Commission agent	1 year and 6 months	"
Clerk	1 year and 5 months	"
Clerk	8 months	"
Chemist	8 months	"
Clerk	7 months	"
Shopkeeper	7 months	"
In business	6 months	"
Stone mason	5 months	"
Nil	4 months	"
In business	3 months	"
In business	3 months	"
Undergraduate	3 months	"
Publisher	3 months	"
Shop assistant	2 months	"
Civil servant	2 months	"
Shopkeeper	1 month	"

Average 18 months (approximately)

STUDY 3

A—B—C—H

Bardswell and Thompson

Pulmonary Tuberculosis Mortality After Sanatorium Treatment —Great Britain Medical Research Com. National Health Insurance—Special Report Series No. 33—London 1919.

Studies on King Edward VII Sanatorium cases (Midhurst)—Statistical Analysis on same basis as Elderton and Perry's Study of Trudeau cases.

1707 cases—3.5% untraced.
Cases discharged 1907 to 1914.
Reported on 1919.
Average age 25.
Males 1053 = 61.7%. Females 654 = 38.3%.

Table 1

Condition on Admission All Groups
Summary of Analysis

		No. Actual Deaths	No. Expected Deaths	Ratio
All (male and female)	1707	751	45.467	16.5
Stage 1				
Male	289	67	10.519	6.4
Female	171	23	4.915	4.7
Stage 2				
Male	541	245	15.726	15.6
Female	307	131	6.899	19.6
Stage 3				
Male	223	166	4.233	39.2
Female	176	119	3.175	37.5

STUDY 3

A—B—E—F—G—I

Somewhat same material considering cases (2016 with duration stay about 20 weeks, not over 2% lost sight of) at end of five-year periods after discharge.

Of all cases 39% alive and well
Of negative " 70% " " "
Of positive " 65.7% " " " 1st stage
44.6% " " " 2nd stage
18.5% " " " 3rd stage

As a group after 5 to 16 years—positive cases only with condition on discharge.

Stage 1
Arrested 66% alive and well
Quiescent 53% " " "
Active 31% " " "
Stage 2
Arrested 60% " " "
Quiescent 40% " " "
Active 17% " " "
Stage 3
Arrested 25% " " "
Quiescent 30% " " "
Active 7% " " "

STUDY 3

A—B—D—E

Conclusions

A. Mortality exceeds by some amount in each bracket the expectation in general population; treatment does not therefore restore these cases to average condition of health enjoyed by general population.

D. Mortality in general heavy and relatively excessive at younger ages.

E. The critical period is during first two or three years after discharge. After 6 to 8 years group one fairly approximates the normal.

A. The results of this statistical analysis are much the same as those by Elderton and Perry for Trudeau, by Hartley Wingfield and Thompson for Frimley and those obtained in the Newcastle, Lancashire and Derbyshire Sanatoria. Combining Adirondack (Trudeau) and Midhurst, the total mortality is for

B. Stage 1 Approx. 6 times normal
2 over 16 times normal
3 about 38 times normal
rates for England and Wales
(English No. 6 table used)

STUDY 4

A—B—C—E—G—N

1. After-histories (in 1924) of 2577 patients County of London treated in institutions 1918:

Noel D. Bardswell—Tubercle, May, 1924

Group		Total Cases				Known to be Alive July, 1923					Known to be Dead July, 1923				
		Insured		Ex-service	Total	Insured		Ex-service	Total	%	Insured		Ex-service	Total	%
		M	F			M	F				M	F			
Class	A	184	211	367	762	150	186	334	670	87.9	34	25	33	92	12.1
	B														
	1	114	88	195	397	99	76	160	335	84.4	15	12	35	62	15.6
	2	191	144	435	770	46	40	221	307	39.9	145	104	214	463	60.1
	3	187	141	320	648	4	4	21	28	4.5	183	137	299	619	95.5
		676	584	1317	2577	299	306	736	1341	52.0	377	278	581	1236	48.

Per cent results better in ex-service men because of longer stay and freedom from financial worry (pensions).

From Co. London Statistics
A negative
B positive
1st stage
2nd stage
3rd stage

2. 10,000 cases treated by London authorities.
Of the **early** cases 75% alive after 5 to 6 years.
Of the moderately advanced, 50%.
The sputum negatives gave permanent recovery in 80% or more.
The early positives in 70%.

STUDY 5

A—B—C—E

Hartley Wingfield and Thompson

An inquiry into the after-histories of patients treated at the Brompton Hospital Sanatorium, Frimley, years 1905 to 1914. Reported 1924. Medical Research Council Great Britain, Special Report Series No. 85.

3400 cases
Of these Incipient 21.2%
Mod. Adv. 56.4%
Far Adv. 22.4%
Average treatment almost four months
(Variation one to eighteen months)
Average age majority, 23 to 27
After five years
Living Incipient M. 79.3%
F. 89.7%
Mod. Adv. M. 67.4%
F. 56.8%
Far Adv. 51. %
After ten years
Living Incipient M. 65.5%
F. 85.2%
Mod. Adv. M. 38.2%
F. 49.7%
Far Adv. 27.8%

STUDY 6

A—B—C—D—E—G—I—O

Lancet 11/29/24
G. Lissant Cox—Central Tuberculosis Officer, Lancashire County Council

Analysis of After-histories of (1) 2228 Patients who have Completed a Course of Sanatorium Treatment, Associated with Dispensary Treatment or Supervision; and (2) 1640 Patients who have Undergone Treatment at Home or in Institutions other than Sanatoriums.

Stage‡ of disease on application and sputum.†	Age-groups.	Sex.	Position at end of 1923 of adult patients who applied during 1914-18 (five years). Patients who completed two months or more sanatorium treatment. Net* No. of patients treated.	Fit for work. %	Unfit for work. %	Died. %	Patients who received home treatment. (Non-sanatorium cases.) Net* No. of patients treated.	Fit for work %	Unfit for work %	Died. %
(a) I. and I. S. positive	15-25	M	65	21.5	7.7	70.8	21	4.8	—	95.2
		F	47	10.6	8.5	80.8	12	8.3	—	91.7
	25-45	M	205	39.0	12.2	48.8	90	38.9	1.1	60.0
		F	112	34.8	4.5	60.7	40	35.0	2.5	62.5
	45-65	M	69	43.5	5.8	50.7	38	21.0	—	78.9
		F	10	10.0	40.0	50.0	7	42.8	—	57.1
	Total	M	339	36.6	10.0	53.4	149	29.5	0.7	69.8
		F	169	26.6	7.7	65.7	59	30.5	1.7	67.8

Neg. or none	15-25	M	92	85.9	1.1	13.0	59	66.1	5.1	28.8
		F	110	86.4	—	13.6	55	69.1	3.6	27.3
	25-45	M	182	85.7	4.9	9.3	110	73.6	—	26.4
		F	207	81.1	4.3	14.5	83	73.5	2.4	24.1
	45-63	M	69	75.4	4.3	20.3	55	65.4	5.4	29.1
		F	32	96.9	—	3.1	21	61.9	—	38.1
	Total	M	343	83.7	3.8	12.5	224	69.6	2.7	27.7
		F	349	84.2	2.6	13.2	159	70.4	2.5	27.0
(b) II. and II. S. positive	15-25	M	89	3.4	1.1	95.5	75	1.3	—	98.7
		F	89	8.9	6.7	84.3	90	—	—	100.0
	25-45	M	268	18.3	5.2	76.5	223	5.4	1.8	92.8
		F	177	15.8	7.3	76.8	155	9.7	2.6	87.7
	45-65	M	136	20.6	12.5	66.9	158	5.0	3.2	91.8
		F	34	35.3	17.6	47.0	31	16.1	—	83.9
	Total	M	493	16.2	6.5	77.3	456	4.6	1.9	93.4
		F	300	16.0	8.3	75.7	276	7.2	1.4	91.3
Neg. or none	15-25	M	28	71.4	10.7	17.8	27	25.9	—	74.1
		F	30	60.0	6.7	33.3	42	16.7	—	83.3
	25-45	M	56	57.1	7.1	35.7	79	34.2	1.3	64.5
		F	57	63.1	5.3	31.6	64	34.4	1.6	64.0
	45-65	M	46	65.2	6.5	28.3	89	31.5	1.1	67.4
		F	18	77.8	5.5	16.7	16	62.5	6.2	31.2
	Total	M	130	63.1	7.7	29.2	195	31.8	1.0	67.2
		F	105	64.8	5.7	29.5	122	31.9	1.6	66.4

* Net number arrived at after deducting patients left county, untraced, ceased treatment for other than medical reasons, died from other than tuberculosis, diagnosis not confirmed, and in institutions on Dec. 31st, 1923.

† Where sputum is shown as positive, tubercle bacilli have been found at some time during treatment.

	Patients with negative or absent sputum.			Patients with positive sputum.		
	1921	1922	1923	1921	1922	1923
Percentage of sanatorium cases that had died at the end of the year stated	14.0	16.0	17.0	61.2	66.2	69.2
Percentage of non-sanatorium cases that had died at the end of the year stated	37.7	42.6	45.3	81.3	84.8	87.4

Includes every adult case diagnosed as in early or intermediate stage which applied for treatment to the County Council years 1914-1918 in Administrative County of Lancashire—population 1¾ millions. Represents working class.

STUDY 7

L

Causes of Death

1. Causes of death in Pulmonary Tuberculosis Cases—Lawrason Brown, American Climatological Society Transactions.

Study based on 1204 patients at or after leaving Trudeau Sanatorium and 378 deaths occurring in Saranac Lake Village amongst patients never at the sanatorium.

Unsatisfactory data in 245 cases.
94.4% died of tuberculosis.

2. Bardswell's Monograph (Study 2):

"Of 11 incipient cases which died, 10 were due to tuberculosis."

STUDY 8

A—B—E—H—I

After-history of 953 tuberculosis patients discharged from the Metropolitan Life Sanatorium from 1914 to 1920.—Howk, Dublin and Knudsen.

Study of cases discharged from December, 1913, to December, 1920—reported on end of year 1921.

Of whole number
A 80% at work
I 10% not able to work
10% dead

In 585 incipient cases there was a mortality about twice as high as normal to other employees of Co.
(Probably to all employees of Co.)

STUDY 9

A—B—E—G—I

T. Watt,
Chief Medical Tuberculosis Officer, Metropolitan Asylum Board, London, England.
Medical Superintendent, King George V Sanatorium.

1321 sifted (analyzed?) cases (Fowler), made up of

Stage 1	39%	All had one month or more
2	36%	sanatorium treatment.
3	25%	

Two to six years later:

Of the Stage 1	74.7% alive and working	8.5% dead
2	42.8% " " "	36.2% "
3	15.6% " " "	73.7% "

Untraced 8%
Of all 44.4% alive, well and working

Separating these on basis only of positive or negative sputum:

Negatives 68.4%	alive and working	11.3% dead
Positives 26.7%	" " "	60. % "

Quotes Welsh National Memorial Association as showing 50 to 80% of their patients working over a period of 10 years. The numbers considered are large.

STUDIES 9A AND 9B

A—E—F—G—I—K

Two groups cases from Frimley Sanatorium

32 all positive arrested returned to former conditions life and work—no after care. At end of two years 31% alive and at work—**28% dead.**

44 all positive arrested—attempt to secure favorable conditions—after care. At end of two years 81% alive and at work—2.3% dead.

STUDY 10

H—M

English Prudential Life Assurance Society

Percentage of actual and expected deaths in an assured group with Tbc. family history and some **suggestive** personal defect.

Type of Assurance	Age Group	Years of Assurance 0-4	5-9	0-9
Whole Life	-37	208	164	181
	38-52	103	191	157
	53-62	270	250	258
	Total	164	191	180
Endowment	-37	92	92	92
	38-52	108	103	105
	Total	97	96	96

STUDY 11

A—F—I

H. R. M. Landis, M. D.

A study of the ultimate results in the Dispensary Treatment of Tuberculosis, National Tuberculosis Association Transactions, 1912. Patients treated 1904—reported on September, 1911, almost seven years.

Total 1067.
Untraced 34.9%.

Number of Patients Living and Exhibiting no Symptoms of Tuberculosis, Divided According to Prognosis.

No symptoms:	(Favorable	80)	102 out of
	(Doubtful	19)	184 cases
	(Unfavorable	3)	

Number of Patients Living but Exhibiting Symptoms of Tuberculosis, Divided According to Prognosis.

Having symptoms:	(Favorable	18)	
	(Doubtful	16)	36 out of
	(Unfavorable	2)	184 cases

In addition there were 24 who were living but who gave no information as to their health or occupation.

STUDY 12

A—C—D—E—F—I

A. J. Cohen, M. D.

A Study of the Cases Discharged from the Eagleville Sanatorium for Consumptives, 1910 to 1921, National Tuberculosis Association Transactions, 1922.

Summary.

The interesting facts brought out by this survey seem to be the following:

Without any previous attempt to follow up the discharged cases, 621 out of 936, or 66.3 per cent, were definitely located. Four hundred and eight, or 65.7 per cent of these were found to be leading normal lives, and economically independent, and we have reasonable ground for believing that most of the unlocated cases are living and doing well.

The earnings of the average case increased after discharge, and the occupations engaged in were as many and varied as before admission.

Children do infinitely better than adults, and while a greater proportion of women remain in what is called a "satisfactory" condition, they do not survive as long as the men.

The death rate is three times greater among the improved than among the disease arrested cases.

A very small percentage of the improved cases survives the seventh year.

STUDY 13

E

W. Jarvis Barlow, M. D., and O. F. Henning, M. D., Los Angeles, California

Results of Twenty Years of Sanatorium Treatment, National Tuberculosis Association Transactions, 1923.

Classification of 359 Cases (1903-1921) for Whom Definite Date of Death is Known. (Grouped According to Length of Life After Leaving Sanatorium.)

	No.	%
Died within 1 year of leaving sanatorium	205	57.1
Died within 5 years of leaving sanatorium	132	36.8
Died within 10 years of leaving sanatorium	22	6.1

STUDY 14

P

New York Telephone Company

Operator Applicants

No. of Applicants Examined—5 years—from 1/1/20 to 12/31/24	54,958
Total No. Rejected—All Medical Causes	7,444
Total No. Rejected Because of Lung Condition	1,239
Per cent Rejected—Lung Condition to Total Examined	2.3%
Per cent Rejected—Lung Condition to Total Rejected	16%
Cost Per Hundred of Medical Examinations	$89.00

Dr. Whitney—Dr. Howk, will you kindly open the discussion on this paper?

Dr. Howk—Gentlemen: Dr. MacSweeney made a very worth while study and analysis of the results of hospitalization of tubercular individuals. I think we must realize first of all that tuberculosis has been passing through a very rapid evolutionary process in the last 20 years. Putting aside those diseases for which specific therapeutic measures have been found or specific preventative measures, no disease within our knowledge has shown a more rapid decline than this chronic disease, tuberculosis, and Dr. Brown's figures, which Dr. MacSweeney has quoted bear evidence of that fact that whereas in the older figures 95 per cent of the people died eventually of their tuberculosis, the present, Dr. Allen is ready to say that 80 per cent die of tuberculosis. Has not the time come, therefore, when we can, with justice to ourselves, and with justice to tuberculosis, revise somewhat our ideas respecting the course as well as the incidence of tuberculosis?

All of Dr. MacSweeney's figures, practically all of them, must inevitably go back a long period of time. The first figures selected in this country date from Trudeau's original experience, starting at 1885 at Saranac Lake. It is the worst experience, the worse known experience that can be collected. And if tuberculosis has dropped practically 50 per cent in the last 20 years, something very definite has happened to the individual who contracts tuberculosis as well as to the disease itself, and the way it affects the individual. For that reason, first of all, we may consider that practically all tuberculosis is insured. If 97 per cent of the people have tuberculosis infection, and we know that a large percentage of them have tuberculosis disease, we know that most of them do carry life insurance. Mortality rates show that.

In our experience at Mt. McGregor, and I am going to quote some of our figures of necessity, because our figures are

more recent in that all of our work has been done during the more favorable period in the apprehension and treatment of the disease, we find, for example, that in taking uniform X-ray plates of every patient coming into the sanatorium regardless of what he comes for, we find 3 per cent of all the individuals have tuberculosis. Of the nontubercular cases, not obviously tubercular, some are diabetic, nephritic, cardiac, gastro-intestinal and will show easily discernible lesions by X-ray in 3 per cent of the total number. That number runs to 2,000 now.

What is the nature of that tuberculosis? That is the kind of tuberculosis that you are insuring constantly. It isn't recognizable by symptoms and usually is not recognizable by physical scientists. It is in other words a latent form of tuberculosis that has been present for many years as a rule. Their compensation has taken place to the point where the diseased lung has expanded in sufficient amount to give relatively normal lung signs and it is very exceptional for us to pick up those cases on physical examination, but they are very, very easily demonstrable on X-ray.

First as to diabetes who can carry a latent tuberculosis. He surely has a latent tuberculosis and not an active one. It is a tuberculosis that is not likely to bother him throughout his life if he can recover from the diabetes with it.

Dr. MacSweeney in his paper calls attention to the results of treatment depending upon the length of treatment. Our experience surely bears out that opinion. We have had no incentive to hurry our patients away. We have treated them, and as a rule almost without exception they have stayed with us until the medical staff was ready to say that they could resume work. As a consequence, we have pursued a longer period of treatment than have most sanatoria up to a few years ago. Our average period of treatment for incipient cases is 7 1/2 months; for the moderately advanced, 13 1/2 months. Now those people stay well in proportion to the

length of treatment and with the reduction in the mortality from tuberculosis with the reduction, apparent reduction, in the incidence of tuberculosis, there are becoming available more men in sanatoria throughout the country as well as in Canada and as a consequence, the sanatoria are today treating their tuberculosis cases for a longer period of time than ever before. Consequently, I think we may look forward to better results from treatment than we have ever known before.

Furthermore, treatment is more intelligently administered than it was. Our period of treatment extends over 12 years, from November, 1913, in the sanatorium. All of our discharged patients, therefore, have a period running for 11 years down to 1 year, and of the incipient, those admitted in the early favorable stage, 89 per cent of them were at work on January 1, last; 6 per cent were unable to work and 5 per cent had died. And let me say that our patients step directly from their period of treatment or rehabilitation, as we call it, into work. There is no period of further convalescence after they leave the sanatorium for practically all of our patients.

Of the 552 moderately advanced cases, 61 per cent of them are able to work, are at work, 15 per cent were unable to work, and 24 per cent had died.

Of the 119 far advanced cases, 21 per cent are at work, 20 per cent are unable to work and 59 per cent have died.

These represent the entire tuberculous population of the Metropolitan so far as we have been able to apprehend it, and with us there has been no incentive in the diagnosis of tuberculosis in order to enable the patient to remain with us, because we treat nontuberculous as well as tuberculous patients.

You might be interested to know something of the means we have used just briefly to get tuberculosis under treatment early and the result. In our first year, we were only able to get 29 per cent of the favorable incipient stage. In one year,

1916, we got up as high as 70 per cent of incipients and our average for all the 12 years is 55 per cent of incipient tuberculosis, the rest being advanced cases. That compares in the average of about 25 to 30 per cent of incipient admissions for all American sanatoria as well as for English sanatoria. And now our work leads us to believe that it is quite possible, at least in circumscribed groups, to bring tubercular groups to treatment in this early favorable stage, which, as I have shown you, takes but a shorter period of time with less economic loss to the individual and infinitely surer immediate results and infinitely surer permanent results.

In the recognition of tuberculosis among our working force, we have used many devices, including an annual examination, instruction of managers throughout the country and Canada in expecting the things that a layman can know about the diagnosis of tuberculosis, but I should say that the one factor that is outstanding, which anyone can recognize in the growth of tuberculosis in an individual is his decreased earning capacity. He will tell you first of all that he is tired in the middle of the afternoon. As his disease gets a bit farther along, he gets tired about noon. Finally he gets up tired and when a man is tired, he doesn't work well, doesn't earn much, if his earnings are dependent upon his productive activity. That is one of the best indications of developing tuberculosis.

Now a word as to readmissions. In our experience, we have readmitted our cases as often as they have needed subsequent treatment, and they constitute the unfavorable type of disease, *i. e.*, those individuals who are unable to carry on continuous labor without a breakdown. From the first of this year, we have discharged 1,600 tubercular cases, of whom 161, or 10 per cent, have been readmitted. And that's all. We readmit practically all who need further treatment. Now of these 161, 73 were incipient, 72 moderately advanced and 1 far advanced and 15 were still under

treatment. Naturally, one would expect that among these readmissions who started out as incipients, for example, you find a large proportion of them with disease advanced on their second, third or fourth readmission. As a matter of fact 86 per cent of the early cases came back as early cases regardless of how long a time they remained away after their last treatment and initial treatment. I think that is a significant thing, because if these unfavorable cases in the early stage can hold their disease in check and still be readmitted as incipient cases, it shows that somehow within these unfavorable individuals there has grown up a resistance, an immunity, call it what you will, that helps them to avoid contracting or the extension of the disease into a moderately advanced one.

I will not discuss that further, but here is one point that seems to have a bearing on the modern trend of tuberculosis to get well, which is certainly harder than it was 20 years ago, and to stay well.

Just a word regarding the early release of these patients. Our experience bears out the statement of other sanatoria showing that 80 per cent of our ex-patients earn more, considerably more, than they did before they had tuberculosis. In Dr. MacSweeney's paper, he speaks of the impaired prognosis in cases of hemorrhage. The advanced case with hemorrhage is an impaired prognosis. I know of nothing—and I think Dr. MacSweeney will agree entirely on this—that is more favorable for an early case than a good hemorrhage. It scares the patient. It brings him to his doctor, and anybody who is bleeding wants to know where the blood comes from. The same is true of pleurisy to a less extent in the early cases.

In the beginning of our experience, when we were having such a large proportion of advanced tuberculosis, the average duration of the disease before the patient was admitted to the sanatorium for treatment extended over a period of two

years; some of them ran as far as five, six and even eight years. The average of all cases was two years. With the more prompt recognition of our tuberculosis, bringing them under treatment at the earliest possible moment, the average, so far as we are able to list from carefully made histories which are checked repeatedly through sanitorium residence, extend over a period of four to six months.

Now there is a type of tuberculosis that we have met with quite frequently, and it seems to be becoming more prominent within the last two or three years. It is a rather acute form and I doubt whether it will ever be recognized in the early or incipient stage. It jumps from nothing into something very real in a short period of time. I saw recently a pair of X-ray films made of a person on the first of September. The patient was an adult, a young woman twenty-two years old. Nothing was shown outside of a little enlargement of the mediastinal glands. She was not sick, but she wasn't well. She wasn't well enough to work. She went home, stayed around home and did nothing except getting more ill with each day. A pair of X-ray plates made 28 days following the first ones showed a tuberculosis extending from the right apex two-thirds of the way down over the right lung, and which appeared almost exactly like acute pneumonia. How much of that tuberculosis we have I don't know. It has been stated that about 60 per cent of tuberculosis goes through a very rapid development, so rapid that we will never be able to recognize it except as an advanced disease. It seems that that percentage is high. As we get our tuberculosis under treatment in its favorable stages, we realize more and more the amount of tuberculosis that does develop from nothing into something in the course of a few weeks or a few months is very real. Obviously such cases have at the outset a bad prognosis. Yet they do surprisingly well when they are put under favorable conditions. A good proportion of them bring this tuberculosis to an arrest.

I had intended to discuss a little—our time is limited—our present conception of tuberculosis. Needless to say, we must revise our ideas of tuberculosis as a disease pretty rapidly. We must consider whether tuberculosis in adults merely results from a spread of childhood tuberculosis—the present conception is largely, I think, that it does not—that adult tuberculosis is a real infection rather than a spread from childhood tuberculosis. You all know of the phenomenon that an animal, that a susceptible animal, injected with verile tuberculosis showed acute tuberculosis at the side where the injection was made, a tuberculosis sore, that spread rapidly; subsequently that an infected animal, if given another injection will get an acute sore at the point of injection. It is the same with children. The child is susceptible—all children are susceptible, all children are infected practically before they reach the age of 12. Adult tuberculosis is more like the breaking out of a tubercular process of a previously immunized animal. So as we go along and study tuberculosis from the standpoint of insurance, I beg that you will keep in mind that the older figures dating from 1885 are subject to revision constantly and that we must revise our ideas respecting tuberculosis. We are always going to live wicked, but the higher and better plane on which we live the more immunity, specific immunity, can be conferred upon people.

I rather suspect that the time will come when this organization will be considering that certain forms of tuberculosis, after a period of treatment, are acceptable for insurance. I thank you.

Dr. Whitney—I am sure we are all indebted to Dr. Howk for his fine discussion of this paper. Will Dr. Gordon Wilson kindly continue the discussion?

Dr. Wilson—Mr. President and Gentlemen: I want to take up the discussion from a clinical and practical standpoint. If you will notice the expectation is six times the normal in Stage 1, 16 times the normal in Stage 2. Now you have got

to bear in mind that these figures here quoted are of diagnosis made by specialists, not made by even good practitioners. Years ago when they first established a sanatorium in Maryland, they treated only incipient cases. Very soon after opening the sanatorium they were deluged with advanced cases, which had been diagnosed as incipient. I had the good fortune to be one of the examiners in Baltimore and I venture to say that 50 per cent of the cases diagnosed as incipient that came to me, belonged to the moderate and advanced classification.

Bearing on that, I had a talk just a few days ago with Dr. Hugh Hammond with regard to the ability of the good men to diagnose tuberculosis. He stated that in his opinion five out of six times the men who had had special training either in tuberculosis dispensaries for a period of years or in a sanatorium would agree about their lung findings, while the other men who had not had that would very often disagree, while all agreed to almost the exact treatment as far as cardiac conditions are concerned. We have got to remember that we are dealing with cases where the stages of the disease in a large number of cases have been defined by men who are not familiar as specialists with this condition. So we are dealing now from an insurance standpoint with a group of people who come to us classified by our examiners, no matter how good they are in other things, as incipient when in fact they are going to belong to the moderate and advanced group.

Now there is one thing I want to take up from the standpoint of disability benefits. Every man who has had any experience as a specialist in the treatment of tuberculosis knows that the first essential when the disease is first known is that the person has it, the patient himself must know. Second that the person that goes up in front of the congregation and confesses to faith doesn't backslide like the man who makes a New Year's resolution. Third, that they must go to a

place where they are under the care of a specialist and are educated that the disease is not a continuous one and has periods of idleness and periods of activity. I believe it would be to the advantage of every company that grants disability insurance to write into the present forms that they would not require any proofs of disability provided that the person went at once to a recognized sanatorium for treatment. It would pay in dollars and cents. It would pay far more in the question of human lives saved and prolonged.

Now as to the question of the duration of treatment. The duration of symptoms as gotten by the careful system in the sanatorium with the co-operation of the patient is entirely different from the duration of the symptoms as gotten by a life insurance examiner from that patient. In the past from a practical standpoint as insurance men, we have almost had to throw out the duration of symptoms as given us by the applicant for insurance as unreliable. Personally I believe that hemorrhages are one of the lucky things for the incipient case so long as it is not advanced, because it does tell the patient and makes the doctor make the diagnosis where he generally fails to do so.

Dr. Whitney—This paper is open to general discussion.

Dr. Sykes—I would like to ask Dr. MacSweeney a question with regard to their experience concerning the return to former occupations. I think many have an idea that, if in early tuberculosis they got an outside position, their chance to reinfection was lessened. That idea has very materially changed in recent years, I believe, but he may have experience with regard to that that might be of interest to us as life insurance men.

Dr. Hobbs—I would like to ask Dr. MacSweeney and Dr. Howk as to what their experience has been in cases of tuberculosis as far as the previous history of pleurisy is concerned, a distinct and separate history of pleurisy.

Dr. Battle—I would like to ask a question as to whether or

not there has been any survey as to men or women affected with tuberculosis going from one state to another, whether or not the men who remained and took treatment in their own state, do not stay well better than those who went to a different climate and back to the original climate after they are quiescent.

Dr. Whitney—Are there any more questions? If not, I will ask Dr. MacSweeney to answer these questions.

Dr. MacSweeney—For anybody to undertake to answer questions regarding tuberculosis indicates a degree of self-complacency on his part which pretty definitely proves that he isn't worth listening to. When I undertake to answer these questions, I want you to realize that I do so with full understanding of the difficulties and the qualifications that apply to any answer that I may give. Dr. Howk presented some figures which bring some of this data more up to date than that which I have used.

In preparing my paper, it would have been a much easier task if there had not been such a great mass of matter to examine. In going over it, I would find what seemed to be profitable leads but after going along some little way would come to a dead end. It involved a great deal of correspondence in clearing up points that were somewhat obscure and right up to date the paper is lacking in three contributions which I had hoped to obtain. You may notice in the blue covered folder that Table 9 is omitted entirely; I hoped up to the last minute it would be available.

First, figures from the Association for Improving the Conditions of the Poor here in New York City, which has carried on for several years an experiment known as the Home Hospital, involving the treatment of a large number of families with a tuberculous member, under tenement conditions, the entire handling of the case and family being comprehensive and well done. They have kept voluminous records. That is the trouble, the records are too voluminous.

Mr. Burritt, the Director of the Association, is kindly having dug out for me and tabulated the actual amount of sickness both from tuberculosis and from other causes which they have experienced in this group five years after recovery from tuberculosis, but it is not yet ready. I will include it when this paper is published. It deals with an actual experiment and not estimates.

Secondly, Dr. Sydenstricker of the United States Public Health Service, who has made a unique morbidity study in Hagerstown, Maryland, which you are probably all familiar with, is having the tuberculosis morbidity, which had not been segregated, separately tabulated, but he has been unable to let me have it up to now.

Thirdly, Doctor Lyman, at Wallingford, Conn., who has been the proponent for many years of the advisability of recovered tuberculosis cases returning to their previous occupations, provided there was nothing specifically unhygienic about the trade in which they had been previously engaged, has undertaken to bring his figures up to date and see if later experience which has now run for eleven or twelve years in all, would bear out the first figures he published which indicated that this was a wise thing to do and that there were few relapses and little illness because of tuberculosis in this group, which covers a large Connecticut mill population. This also is not ready. Dr. Lyman tells me that so far as the study has gone he finds nothing to change his previously expressed opinion, and this, I think, answers Doctor Sykes' question as well as it can be answered.

Dr. Hobbs' question: I take it pleurisy with effusion is meant. Pleurisy unqualified is too loose to mean anything. Pleurisy, with effusion, however, from the tuberculosis student's standpoint is a very definite, a very concrete thing and unless it can be proven to be something else invariably means tuberculosis. The significance of it is tremendous, because I believe that the pleurisy with effusion cases and the acute

cases which Dr. Howk spoke about are extremely interesting groups and first cousins if not brothers and sisters. The patient, who has developed a pleurisy with effusion, has just by good luck or by reason of a narrow margin, in my estimation, escaped being one of these acute pneumonic forms. In other words, in one we have the same cause resulting in an acute pneumonic condition, whereas in the other the glandular structure at the root of the lung has retarded it sufficiently to have formed it into a pleurisy with effusion. Pleurisies with effusion, irrespective of whether they are recognized as tuberculosis or not, are apt to be given prolonged treatment. It may not be systematized; it may not be well thought out, but in general terms, it is apt to be the sort of treatment which a case of tuberculosis would receive, and except in a sanatorium, the kind of treatment which the general run of tuberculosis cases still receives. Because it has been to some extent modified by being a pleurisy with effusion at all, and because of this prolonged treatment, these cases in general do rather well.

As to the acute pneumonic cases they have in the past eight years in our experience in the New York Telephone Company, constituted pretty uniformly 10% of all cases, and it has been our experience that they go on from the beginning essentially as advanced cases, and die. I am glad to hear from Doctor Howk that he is obtaining better results. The large proportion of these cases, then, 10% which I named, may astonish you. It did so in our study of the cases in the Telephone Organization, and we felt that there must be some fault with our work, but in about 1,000 cases, and over these several years, it has been so uniform, that I have come to the conclusion that it is a fixed thing. In Framingham, in a similar study which they made shortly after ours, they placed the percentage at 14, of their total number of cases.

The actual results obtained in sanatoria in any of the climatic resorts over a long period of years are very nearly identical

with those obtained elsewhere. The results, in the Agnes Memorial Sanatorium near Denver, a large well conducted institution, established several years, are essentially the same as those in the Adirondacks, Asheville, Otisville, which are close by New York. The immediate results of treatment, in other words, do not seem to be influenced so far as statistics will prove anything by climatic influences. Whether a person having had tuberculosis will live longer in the climate of Colorado, Arizona or Southern California is well nigh impossible to tell. In my paper, I spoke about being convinced of the favorable influence of country life on recovered cases of tuberculosis, and that is a factor which so often comes into consideration in these cases. They change their plans of life. They remove from large seaboard, urban centers to comparatively small villages or even rural surroundings. Many of them change their occupations. If they don't change their occupations, they change their own life point of view so that they no longer subject themselves to the strain and tenseness which was a factor in bringing on the condition, which makes it very difficult to tell what, if anything, the climatic factor has to do with it. I think there is a general impression that people's health is benefited by change. Perhaps that is true, but there again the more and more I see of people who change, the more I am given to wondering how much they are benefited by getting away from their personal associations rather than their surroundings. Families, nagging members of the family, people with whom you have lived too intimately for a long time, or who are too socially inclined, do you a real service when they force you to go away and you do yourself a real service when you go away from them. As to how much the removal into another state or another location might be influenced by that, as well as by the other things I have mentioned, they are conflicting elements of the question, and I don't think anybody is in a position to give an answer. There has long been a belief that if a person wishes to remain well

after having recovered, he had better make his cure in the climate in which he expects to be permanently. This is just as difficult a question to answer as the other. On the whole, I think that we may say there is no great advantage involved, in most cases, in going far from home, and that the majority of them will probably get along quite as well at home if they can lead the right sort of lives after they are well.

Doctor Howk says that the number of recovered cases which eventually die of tuberculosis, though they may live for years, is not over 80. This figure may be more exact than mine, but it has been said that the chief reason that one can quote such a figure is that the others have not yet had time to die. We used to believe that it was about 95%. In figures from the Trudeau Sanatorium which go back now for 40 years, it stands at about 80, and I presume will be found to be somewhat lower as the years go by. At all events, a very high proportion of people who have once had a clinical tuberculosis, eventually die of it.

As to hemorrhages, there are two points from an insurance standpoint which are of immense importance. Again recognizing the extreme difficulty of classifying cases of tuberculosis, they do divide themselves up into two general groups, those who actually start with the common conception of the small lesion acute and localized, which makes the individual ill, and those who start right from the beginning with a fibrotic process. It may, likewise, be in the apex of the lungs. These latter cases do not give the same clinical evidence in their early stages. They are probably the real stumbling block to discovering larger numbers of cases in their incipiency. They don't make the patient ill or they don't make them sufficiently different from their previous state to concentrate the patient's attention upon the matter so that he will do something about it until the actual area involved in the disease is very considerable. In other words, the toxemia which accompanies the process is so much less

than in the typical incipient cases that from a clinical standpoint, they are two essentially different groups.

Now, if your incipient case has a hemorrhage, as some of them do in the very early stages, so that they can be brought, or probably will be brought, by reason of their own willingness and impressed by their hemorrhage, are willing to be placed under treatment, you are giving them a chance for their lives, a chance for recovery, which is probably then much better than if they delayed for even a comparatively short time. The occurrence of a hemorrhage in a case like that from an insurance standpoint, if it leads to early treatment of the patient, if he has one of these small incipient lesions—which, by the way, in their ultimate outcome also differ from the other type of cases in that the real recovery seems to apply to them much more than the others—is a favorable factor, provided the tuberculosis always was five years ago. The typical incipient, *i. e.*, acute tuberculosis, dies or gets very well in a short time—so that if you have a hemorrhage in that type of case with a small scar demonstrable later on either by examination or X-ray, which, by reason of that hemorrhage, was brought under treatment and given sufficient treatment, and has gone for five years in perfectly good health and is in good health at the time of examination, you are probably dealing with a case in which the risk is as good as any case you will ever deal with.

Of course, in fibrotic cases, on the other hand, a hemorrhage is equivalent to an ulceration in some point or perhaps in a fairly extensive area in the large process and it has a totally different significance.

In passing, I might call your attention to the last table in my paper which shows that in the examination of some 54,000 applicants for operators' positions in the New York Telephone Company over a period of some eight years, 2.3 per cent of them were rejected by reason of lung diseases. Dr. Howk took a supposedly nontubercular group at Mt. McGregor, I

think 2,000 people, and X-rayed and studied them at leisure and he got 3 per cent. Now, that is a rather striking thing, I think, and it ought to cheer up insurance Medical Directors to feel that on common routine physical examination, if it is done fairly carefully, you can come within one-tenth of one per cent of doing as well as can be done by any method. The examination of these telephone operator applicants is the same sort of examination that you make of your insurance applicants, except that we make them take off their clothes. The time element and the amount of attention which is given to any one applicant is fairly well expressed by the last item of that table, that it only cost us $89 a hundred to have them examined, and that included not only the doctor, but the rent and stationery and the various other items, in so far as a cost basis calculation includes everything, so the examinations were not elaborate examinations, and they were not tedious examinations and they were examinations which could very practically be made in large groups. All young women, looking for jobs in New York City, apply on Monday morning. A few of them come around Monday afternoon, who haven't got another job and a few others on Tuesday, and in those three periods, Monday morning and Monday afternoon and Tuesday morning, 75% that you receive for the entire week apply. An employer wants to know, then, not next week, if they are fit subjects to employ, and they want to know at once if you will take them. That you can do, on that practical basis, work of a type which will give you figures so closely approximating those which Dr. Howk has told us about under absolutely ideal conditions is an important practical point.

This whole proposition of tuberculosis is a pretty bad one, so bad in fact, that the consideration of the detail of it may seem to some hardly worth while, and just in closing, therefore, I would like to call your attention to a sentence which occurs in my paper and which we all of us need

to constantly keep in mind and remind ourselves of, that after all, despite what has been said about the deaths, 74.3 per cent of the first and second stages were still alive 20 to 39 years later. These people are insurable, gentlemen, practically insurable, I think they are entitled to consideration, and I trust if I have accomplished anything by the work I have done on the paper, I have won the right to ask your sympathetic consideration for them when they apply.

Dr. Whitney—If the members have not already realized how much time and effort has been put on this paper by Dr. MacSweeney, I trust you will when you have had time to study it more at your leisure. Dr. Dublin is here; may we have the Dreyer report?

1925 REPORT OF THE COMMITTEE ON DREYER MEASUREMENTS IN RELATION TO LIFE INSURANCE UNDERWRITING PRACTICE

III. Anthropometric and Mortality Tables for Overweights. Chest Girth in Relation to Relative Spine Length

1. The Assessment of Physical Fitness from Criteria of Vital Capacity, Chest Girth, Body Weight and Trunk-Length

It may be well to preface the third report of the Committee by summarizing the several inquiries which lead to the present tables on chest girth and relative spine-length in relation to mortality. In 1922, a paper was read before the Association* digesting Dr. Georges Dreyer's book "The Assessment of Physical Fitness." It will be recalled that Dreyer in his text endeavored to establish a series of anthropometric norms which could be used to distinguish those who are physically fit from those who are not. These norms are based upon the inter-relationships existing between a limited number of body measures: Weight, height-sitting or stem-length, chest-girth, and vital capacity as measured by the spirometer. These measures, Dreyer believes, give a clue to physical fitness. By applying what Dreyer terms the normal relationships between the several measures to individual cases, he thinks it is possible to distinguish the physically fit from the unfit.†

Dreyer expressed the relationships between the four measurements in a series of simple formulæ. Each one gives the value of one of the measures in terms of the others. To obviate calculations, the author appended in his book a num-

*Dublin, Louis I. "Work of Dreyer in Relation to Life Insurance Examinations," with discussion by Dr. Eugene Lyman Fisk, Proceedings, Assoc. of Life Ins. Medical Directors, 1922, p. 202.

†Dreyer, Georges. "The Assessment of Physical Fitness," Paul B. Hoeber, New York, 1921, p. 127.

ber of tables which express the values of these measures in terms of each other. From the tables it is possible to read off what the measurements of a "normal" individual should be from any one of the four that may be given. Distinction of sex is made for persons up to age 50, in both metric and American or English systems of measures. DREYER'S use of the tables in individual cases can be determined either by consulting his book or through reference to the paper read before the 1922 meeting of this Association. It will suffice to say that the Association was at that time interested in testing from life insurance data the contentions of DREYER, and this led to the formation of this Committee and to the preparation of three consecutive reports.

2. The Committee's 1923 Report

In 1923, the Committee endeavored to check DREYER'S results. It presented first an application of (a) DREYER'S vital capacity criterion, (b) DREYER'S weight criterion and (c) the DREYER combined weight and vital capacity criterion to 1,000 male employees of the Metropolitan Life Insurance Company's Home Office. The result of this test showed that until a better definition of "physical fitness" is made, it would not be practicable to use DREYER'S criteria in life insurance examinations. Cases which showed serious impairment were classed by DREYER'S criteria as "probably normal" and 31.2 per cent of the male employees showing no impairment on careful physical examination were thrown into the "probably abnormal" group by DREYER'S criteria! This breakdown of DREYER'S formulæ and tables suggested that the subject was open for further development, especially in the direction of a mortality test.

In the same report (1923) the Committee gave data collected by the New York Life Insurance Company, the Mutual Life Insurance Company and the Metropolitan Life Insurance Company on stem-length, spine-length and the significant relations between these measures. This study showed that since

stem-length and spine-length were closely correlated, it would be practicable to make the mortality test from the spine-length records of the Union Central Life Insurance Company. In the latter part of the 1923 report certain preliminary data were quoted from the Union Central sources showing spine-length in relation to age, height in relation to spine-length, and relative spine-length (percentage, spine-length to total height) among overweights. These preliminary tables lead to the suggestion that perhaps it might be possible to refine our underwriting procedure for overweights if relative spine-length were taken into account. These data also provided certain statistical constants for the separation of the overweight observations into classes of the mortality investigation which was conducted in 1924.

3. Results of the 1924 Investigation

At the 1924 meeting, the Committee reported that, in general, mortality was the more favorable among overweights with the lower readings of relative spine-length for short men and men of medium height. Among tall overweights, however, the mortality was lower among men with relatively long spines. The significance of these findings was not clear. It was suggested that perhaps chest-girth should be taken into account. Accordingly, in 1925, the materials were reclassed to show chest-girth in relation to relative spine-length, all build classes combined, for overweight short men, men of medium height and for tall men.

4. The 1925 Investigation

Anthropometric Data on Chest-Girth

It might be well at this point to quote the rather interesting statistical constants of chest-girth in relation to relative spine-length. These calculations were a necessary preliminary to classifying the materials for the mortality investigation on these points.

TABLE 1

Chest Girth in Relation to Relative Spine Length among Overweight Men. Union Central Policy Issues, 1887 to 1908. Statistical Constants for Chest Girth in Each Relative Spine Length Class

Overweights; Height and Relative Spine-Length	STATISTICAL CONSTANT FOR CHEST-GIRTH					No. of Chest Girths	
	Mean Chest Girth (Inches) (M)	Standard Deviation (in Inches) (S. D.)	Coefficient of Variation (V) = S. D. x 100 / M	Skewness (S)	Excess (E)	Below Mean	Above Mean
All Height Classes* Combined:							
Relative Spine-Length (Total):	38.78 ± .008	2.25 ± .006	5.8	—.179 ± .004	.075 ± .002	19,798	18,259
Below mean R. S. L. (—S. D.)	38.70 ± .023	2.27 ± .016	5.9	—.124 ± .012	.084 ± .006	2,535	2,157
About mean R. S. L. (±S. D.)	38.78 ± .009	2.23 ± .006	5.8	—.180 ± .005	.069 ± .002	15,318	14,084
Above mean R. S. L. (+S. D.)	38.87 ± .025	2.37 ± .018	6.1	—.224 ± .013	.088 ± .010	2,045	2,018
Overweight Short Men*							
Relative Spine-Length (Total):	37.37 ± .016	1.95 ± .012	5.2	—.201 ± .010	.140 ± .005	3,278	3,290
Below mean R. S. L. (—S. D.)	37.21 ± .052	2.03 ± .037	5.5	—.057 ± .031	.077 ± .016	373	330
About mean R. S. L. (±S. D.)	37.38 ± .019	1.93 ± .013	5.2	—.211 ± .012	.152 ± .006	2,415	2,488
Above mean R. S. L. (+S. D.)	37.44 ± .044	2.04 ± .031	5.4	—.266 ± .027	.121 ± .013	490	472
Overweight Men of Medium Height*							
Relative Spine-Length (Total):	38.62 ± .009	2.04 ± .006	5.3	—.173 ± .005	.091 ± .003	12,691	10,193
Below mean R. S. L. (—S. D.)	38.56 ± .026	2.06 ± .018	5.3	—.201 ± .015	.085 ± .008	1,641	1,254
About mean R. S. L. (±S. D.)	38.60 ± .010	2.03 ± .007	5.3	—.164 ± .006	.090 ± .003	9,882	7,785
Above mean R. S. L. (+S. D.)	38.87 ± .029	2.10 ± .021	5.4	—.202 ± .017	.099 ± .009	1,168	1,154
Overweight Tall Men:*							
Relative Spine-Length (Total):	40.26 ± .016	2.16 ± .011	5.4	—.174 ± .009	.100 ± .004	4,629	3,976
Below mean R. S. L. (—S. D.)	40.15 ± .047	2.19 ± .033	5.5	—.045 ± .026	.280 ± .013	553	441
About mean R. S. L. (±S. D.)	40.24 ± .017	2.13 ± .012	5.3	—.197 ± .010	.061 ± .005	3,698	3,134
Above mean R. S. L. (+S. D.)	40.64 ± .057	2.34 ± .040	5.8	—.220 ± .030	.125 ± .015	435	344

*Short men, 66 inches and under; men of medium height, 67 to 70 inches; tall men, 71 inches and over. (Page 7, Vol. II, Medico-Actuarial Investigation.)

Note: Figures following ± sign are "probable errors" of the respective constants. This figure signifies that it is an even chance that the true value of the constant lies within or without the limits set by the "probable error."

The first point of interest is that chest-girth increases with total height. Within a given height class, there is no important variation of chest-girth with an increase in relative spine-length. It was also observed that with increase in height there followed an increase in the variability of chest-girth, that is to say, short men adhere more closely to the average chest-girth than do tall men. Within each height class (*i. e.*, overweight short men) there was no change in the variability or dispersion of chest-girths with increase in spine-length. These findings suggest therefore, that the chest-girth factor did not account for the peculiar mortality showing of the relative spine-length classes reported in our 1924 investigation. As will be shown in the next section, chest-girth was an independent factor and that within chest-girth classes the showing with respect to relative spine-length was approximately the same as for all chest-girth groups combined; the short men and men of medium height had the lower mortality ratios in the lower spine-length classes and tall men gave the more favorable readings in the high relative spine-length group. In closing our comment on the anthropometric data for chest-girths, we may say that the auxiliary constants, the "skewness" (S) and "excess" (E), showed these chest-girth distributions to be approximately normal, or Charlier type A, series, and that our assumptions in dividing the materials for purposes of the mortality investigation by chest-girth classes were valid.

Mortality According to Chest-Girth

In establishing chest-girth classes for the mortality tables, we set two for each relative spine-length class under each height-class. *Example*: for overweight short-men we showed (a) relative spine-length below the mean by an amount exceeding the standard deviation, (b) relative spine-length about the mean within range of the standard deviation and (c) relative spine-lengths in excess of the mean by more than

the standard deviation. Each of the (a), (b), (c) classes was further divided into (1) chest-girths below the average and (2) chest-girths above the average. (See Table 1.) ("Average" means the average chest-girth for the relative spine-length class.)

Our results this year, confirm last year's report. Regardless of the classing by chest-girth, tall overweights still show lower mortalities in the long spine-length class, and short men and men of medium height (overweights) show the lower mortality readings in the lower spine-length classes. The general data are set forth in Table 2.

The classing of the material by chest-girth brings out another surprising conclusion. Invariably, the lower mortality is shown in the chest-girth groups *below* the mean. Combining our chest girth and relative spine-length readings, we may say that the best mortalities are found among overweight short men, and for men of medium height among *short* relative spine-length classes and for chest-girths *below* average. For overweight tall men the mortality is best among *long* relative spine groups and for chest-girths below average!

5. Use of Dreyer's Criteria not Justified in Life Insurance Underwriting Practice

The foregoing findings, taken with the physical examination test on which we reported in our 1923 inquiry, suggest that we cannot depend upon the original DREYER tables in practical life insurance underwriting. We expected to find from the assumptions of DREYER in his book that the more favorable mortality ratios would be disclosed among persons with relatively long spines and with chests above average. But, in general, the work of the past two years shows a contrary indication, except in a minor way for tall overweights. The question arises of course, whether our findings may be vitiated by especially careful selection of overweights showing the lower chest and spine-length readings. If only the

TABLE 2.

Per Cent Age, Actual to Expected Mortality Among Overweight White Males. By Height,* Relative Spine-Length, and Chest Measurement Groups. (All Build Classes Combined.) Union Central Policy Issues 1887 to 1908, Experience Carried to Policy Anniversary in 1921. Select and Ultimate Basis by M. A. Table

Relative Spine-Length; Chest-Girth	All Height Classes			Short Men*			Medium Height Men*			Tall Men*		
	Actual Deaths	Expected Deaths	Ratio, Actual to Expected with P. E.†	Actual Deaths	Expected Deaths	Ratio, Actual to Expected with P. E.†	Actual Deaths	Expected Deaths	Ratio, Actual to Expected with P. E.†	Actual Deaths	Expected Deaths	Ratio, Actual to Expected with P. E.†
Totals	4,571	4,298.6	106.3± 1.1	786	761.4	103.2± 2.5	2,683	2,579.3	104.0± 1.3	1,102	957.9	115.0± 2.4
All Spine-Lengths Combined:												
Chest below mean	1,999	2,132.6	93.7± 1.4	318	334.1	95.2± 3.6	1,232	1,326.5	92.9± 1.8	449	472.0	95.1± 3.0
Chest above mean	2,572	2,166.0	118.7± 1.6	468	427.3	109.5± 3.4	1,451	1,252.8	115.8± 2.1	653	485.9	134.4± 3.5
Relative Spine-Length:												
Below Limit of S. D. (—from mean)												
Chest below mean	230	255.1	90.2± 4.0	35	39.1	89.5±10.2	138	161.1	85.7± 4.9	57	54.9	103.8± 9.3
Chest above mean	275	244.3	112.6± 4.6	38	38.0	100.0±10.9	152	153.8	98.8± 5.4	85	52.5	161.9±11.9
Within Limits of S. D. (+or—from mean)												
Chest below mean	1,564	1,662.6	94.1± 1.6	230	244.5	94.1± 4.2	976	1,043.1	93.6± 2.0	358	375.0	95.5± 3.4
Chest above mean	2,009	1,666.6	120.5± 1.8	366	331.0	110.6± 3.9	1,131	949.8	119.1± 2.4	512	385.8	132.7± 4.0
Above Limit of S. D. (+ from mean)												
Chest below mean	205	214.9	95.4± 4.5	53	50.5	105.0± 9.7	118	122.3	96.5± 6.0	34	42.1	80.8± 9.3
Chest above mean	288	255.1	112.9± 4.5	64	58.3	109.8± 9.2	168	149.2	112.6± 5.9	56	47.6	117.6±10.6

* Height Groups were: Short Men—66 inches and under; Medium Height Men—67 to 70 inches; Tall Men—71 inches and over.

† P. E. = "probable error"; for explanation see technical appendix.

best of the risks offered in these classes were accepted by the Union Central Life during the period 1887-1908, this may account for the more favorable readings from the mortality records. It follows conclusively, however, that as matters stand at the present time we should not be justified, either on grounds of actual physical examination findings, or the results of the mortality studies, in using DREYER's formulæ or tables in practical life underwriting.

Dr. Whitney—Gentlemen, what is your pleasure in regard to this report?

Motion was made and seconded that the report be accepted, and that the Committee be discharged with thanks. Motion was carried.

Dr. Whitney—We will now have the paper on "Some Non-medical Factors Affecting Mortality" by Dr. Henry A. Baker.

NON-MEDICAL FACTORS AFFECTING MORTALITY.

By DR. HENRY A. BAKER

Medical Director of the Kansas City Life Insurance Co.

There are a number of factors other than strictly medical ones which influence the mortality of a life insurance company. Many of these factors have little or no bearing on the mortality of the great old line companies whose outstanding business is of such magnitude as to overcome all ordinary fluctuations. However, it is proposed to treat the subject from the standpoint of the smaller and medium sized companies which have no large amount of insurance in force, and which depend on a low mortality for the upbuilding of a sufficient surplus.

For convenience of discussion the subject-matter will be divided into the following headings:

1. Amount of new business written.

2. Character and source of new business—agency—brokerage, etc.

3. Substandard.

4. Reinsurance.

1. Amount of New Business Written.

A company which writes each year an amount of new business large in proportion to the total amount in force will always have a lower mortality, provided, of course, the business has been selected with ordinary care. The effect of medical selection is very pronounced in the first few policy years and persists for many years, as shown by the Medico Actuarial Investigation. However, a selection of undue severity may defeat its own ends by curtailing too much the production of new business. I remember many years ago a remark by Dr. O. H. Rogers that the best selection was not that which picked out only the best risks, but that which went down the line and accepted every risk that could be written with profit to the company. This I believe to be true, and such a selection will always result in a larger volume of business and will not adversely affect the mortality. It is more profitable to write a large agency business at a fair mortality than a small one at a very low mortality. A number of factors of extreme importance enter into consideration here, principal among which is the building and maintenance of an active and loyal agency organization. This cannot be accomplished without active and sympathetic co-operation on the part of the medical department and undoubtedly the most effective co-operation is to approve the greatest possible number of applications. In view of the extremely favorable mortality experience of the last few years, it would seem that more liberality might safely be exercised in the selection of new business. This, of course, refers to straight agency business and not to some of the classes hereafter mentioned.

2. Character and Source of New Business.

Legitimate agency business written by the company's own field men on standard life and endowment forms is undoubtedly the most profitable to the company both in point of persistency and of low mortality. This business is the backbone of every conservative and well managed company. Of greatly less value is business written under the high pressure methods of agency drives and prize contests. There is a constant pressure here upon agent, examiner, medical director and management to get through questionable business which is bound to result in higher mortality. In like manner, we may also class brokerage business as being of a distinctly lower grade than first-class agency business. Many of the larger cases which are brokered by special agents to a large number of companies are of doubtful value as insurance risks, both from the increasing moral hazard and from the difficulty of obtaining an absolutely fair and impartial examination. It is not an uncommon practice to have expert preliminary examinations made in such cases and the applicants do not submit themselves for examination by the regular company examiners until any impairment which may be found has been cleared up.

The practice of loading up an applicant with more insurance than he is able to carry must also be mentioned as a factor that increases lapse, and therefore, selects against mortality. The plan upon which business is written will also be reflected in the company's mortality. Term insurance shows the highest mortality and the highest lapse, the endowments persist best of all and show the lowest mortality—unless, of course, the endowment class has been loaded with an extra mortality by that reprehensible practice of giving standard endowments to substandard risks—a relic of the dark ages which is even now indulged in by intelligent medical directors of my acquaintance.

3. Substandard Insurance.

Substandard insurance is now written in some form by practically all the larger and medium sized companies. In view of the fact that very full information in regard to the ratings for nearly all of the larger substandard groups has been released by Rogers and Hunter and others of great experience it is entirely logical that these risks should be written by all companies. However, we should remember that the mortality saving in the substandard class will probably not be as great as in the standard class. No matter how carefully the substandard risks are rated the class is constantly selected against, first by the extra bad ones who seek to get in, and second, by the extra good ones who seek to get out. The bad ones stay and the good ones lapse and only the constant infusion of new blood will save the class from an ultimate mortality much higher than anticipated. It follows that those companies desiring a very low mortality will be cautious in selecting substandard risks among the higher ratings and will be sufficiently liberal in rating the better risks, so that the efforts of agents to obtain them better policies in other companies will not avail. A few basic principles may be mentioned which I believe are adhered to by those who have most experience in this business. First, the substandard business accepted should be that which originates in the company's own agency canvass for standard business. In other words, the writing of substandard business should be used as a means of helping the company's own agents and saving them the loss due to rejections. It may also be mentioned that a distinct service is thereby rendered those who have applied in good faith for insurance and who, being substandard risks, need insurance even more than standard risks. Second, cases which come to a company as the declined business of another company or which are brokered or submitted by the agents of other companies even though the application may bear the signature of

one of the company's own agents, should be looked upon with suspicion. There is a definite selection against the company in these cases which is very difficult to estimate. The business is often submitted for the purpose of getting a better rating than that already offered by another company and it is quite a common practice to shop substandard cases around among a number of companies in order to get the best possible rating. Business accepted in this manner is bound to show a higher mortality, and many of the companies having a wide experience in substandard have rules limiting their acceptance to business originating with their own agents in the field.

4. Reinsurance.

Reinsurance offers a real problem to the average company. It is the line of least resistance and a tempting bait to increase the volume of issued business. It has been used with indifferent success by a number of companies as a means of supplementing a failing agency organization.

There are two widely different classes of reinsurance.

First, the cream of the business which is secured from small companies who only carry five or ten thousand on their own account and reinsure an extra five or ten. Time was when this business could be had for the asking on the term plan without commission but those days are past, and now it is a matter of keen competition and 50% or more commission and even at that, this good business is now mostly cared for by reciprocal arrangements which take it out of the general market. There remains that vast volume of reinsurance which is passed around by correspondence among the companies, where either on account of the amount applied for or the doubtful character of the risk, the original company cannot assume the entire amount. I believe it to be a fact that all companies have experienced a higher mortality with this class of reinsurance. All published experience shows a distinctly higher mortality with the larger cases and where these cases

have been written as reinsurance there is an added extra mortality due probably to what has been defined as a double selection against the company accepting the reinsurance, first by the applicant, and second, by the company which offers the reinsurance. The acceptance of sporadic cases of this kind for large amounts, I believe, to be poor underwriting. The mortality is liable to adversely affect a fine group of agency business which has been selected with great care. It may be argued that the acceptance of business in the classes mentioned will result in profit to the company even though the mortality is high, provided, of course, it is less than the American table upon which the premiums are based. However, the net results in the end will prove disappointing as experience has shown both a high mortality and a high lapse ratio and as a rule, the initial cost of the business is excessive.

It may seem that some of the foregoing matter is of an academic nature, so well known are the rules regarding same, but while centering our attention on the scientific features of medical selection it is well to always remember the practical side of life underwriting.

Dr. Whitney—Dr. Lounsberry, will you open the discussion?

Dr. Lounsberry—Mr. President and Gentlemen: As a prefix to the few remarks I may make on Dr. Baker's paper "Non-medical Factors Affecting Mortality" I desire to compliment him upon his ability to handle the subject so admirably and concisely. I fully agree with everything he has said in his paper with the exception of the reinsurance problem. In my opinion, before any reinsurance is submitted to another company the initial company should assume that were they prepared to issue a policy for the amount applied for, they would do so and without hesitation. If the original company selects with this thought in mind, I believe that reinsurance companies will make a decided profit. We do very little reinsurance business, but we do reinsure a considerable

volume. We have never put up to a reinsuring company a risk that we would not have accepted, had not the amount been beyond our limit. The great danger, in my judgment, comes from the "peddling system." For the purpose of illustration let us assume that the company's maximum is twenty thousand and they get an application for sixty thousand. I do not believe that they should approach the risk from their maximum standard, but that they should consider the risk from the sixty thousand standard, from a financial and every other point of view. Should they consider the application from the twenty thousand point and for the purpose of smoothing out a good agent, passing it about in ten's and fifteen's, there is liable to be an excessive mortality incident to the over insurance of the life. I have been amazed at the number of applications for reinsurance that we have received where physical impairments had been found and perhaps cleared upon one or two examinations. I do not believe that this is business to be submitted to a reinsuring company. We ordinarily consider it from our maximum point of view and tell the agent to place it wherever he can get it. Let the other fellow do his own selecting.

"Non-medical Factors Affecting Mortality"—the title of this paper. In my opinion if the present trend of insuring without medical examinations grows, it will be a much more important factor than it is today. I have never been quite able to divide the "sheep from the goats." The moral hazard is so apt to affect the physical well being; the occupational hazard is so apt to affect the physical standing of a risk that, as I said before, I have been absolutely unable to separate them.

I am inclined to ask the question "Do the companies doing non-medical disregard the information in their possession that physical impairments have been found and issue on the statement made by the applicant, who certainly is the interested party, and frequently answered by the agent who is finan-

cially interested?" I believe that this is a big question and one that at this date or some other date, must be faced. My own opinion is that we have no moral right to eliminate the physical examination if we take advantage of the information developed by other companies in their examination of a risk. I have given this matter considerable thought; I have attempted to approach it from every angle and I still maintain that this question of writing insurance without medical examinations is one that should be considered in the discussion of Dr. Baker's paper, "Non-medical Factors Affecting Mortality."

Dr. Whitney—Dr. Eakins.

Dr. Eakins—Mr. President and Gentlemen: It has been very difficult for me to approach Baker's subject with the proper spirit of seriousness. I am more inclined to speak of it with tongue in cheek, than with head bowed in reverence. Factors affecting mortality, whatever their classification, inevitably lead to the erstwhile gentle art of selection. Selection, not so long ago, was a goal toward which we all aimed, according to our capacity; and we were serious about it. Just now the trend seems to be toward asking us to give up our preconception of selection; I would dislike to be compelled to describe what selection has been made to look like recently—cordially dislike the compulsion to describe it, because I hate horrible pictures, and the necessity for drawing one myself would be obnoxious. Selection once was, and still is, one of the fundamental principles of life insurance. Present tendencies, at first blush, seem to "simianize" the old cardinals of selection which we were trained to revere. The second blush may bring the realization that all things change and perhaps the practice of life insurance will be translated to plain business, when selection will be placed upon another footing. The kindest thing which may be said, is that methods will have to be readjusted and a liberalization of selection developed. The third blush may induce us to be brave enough,

foresighted enough, intelligent enough—with a dash of invention and a sprinkle of ingenuity—to so revise and improve our methods that selection will then be spelled with all capital letters. God was ever good to us, and manna has never yet been withheld!

Before seeing Baker's classification, a quick review revealed the following so-called non-medical, mortality-affecting factors: Habitat, Occupation, Habits, Moral Hazard, Race and Sex. It may be because of a jaundiced eye, but mine can not look at any one of those six without seeing a very definite medical element in it. Even the death claim which originated at the railway crossing was medical, according to our psychiatrist who contends that the motor driver, when a boy, used to stick pins in beetles. The psycho-analyst, with knowledge of these beetle-stabbing proclivities, would have rejected the application, knowing full well that such an applicant would, joyously and fearlessly, tilt with a full-speeding locomotive. At least, so he says; and contends that, had he sat at the underwriters' table, the Company would not have suffered the loss. Where then, to look for bona fide non-medical factors?

The following list might be used:

1. Cross word puzzlers: In this class, expert orthographers are required as underwriters, which automatically excludes many physicians.

2. Non-medical Insurance: The name itself is a justifying qualification for its inclusion.

3. Examination by chiropractors: The keenest prying can find no medical element here.

Consideration for the seriousness of our business, and this meeting, prevents any extension of the list of truly representative non-medical factors entering the underwriters' life work of selection. If there are any essential factors without,

to most of us, a discoverable medical trace, I feel sure Folin and Benedict would glory in being turned loose on them.

Although we are supposed to be scientifically trained, we are really very loose in our tolerations. We tolerate such an incongruity as non-medical insurance and periodical medical examinations sleeping under the same sheet; in subsequent breaths, we propagandize for each nor have we yet laughed at ourselves for advocating such strange bed fellows. The unaccountability for the milk inside and the hair outside a cocoanut is classic. The milk and the hair are all very well, where, and as, they are. But what a sad thing a cocoanut would be were the milk and the hair mixed. Rather fine selection required to separate them; but finer still demanded to winnow the chaff from the grain in such a heterogenous collection of risks as are dumped on the underwriters' table today. The measuring rods and gauges, the determining factors to aid in estimating probable mortalities, are ever developing, ever becoming more accurate. Some of the older ones have been discarded, others are falling into disuse. Accuracy and practicability in measuring rods, simplicity, is most desirable. The ultimate aim is results, provided the word "results" is given a broad definition—lack of waste, with economy and inclusive profit. Mad rushes for fallacious results are bad practice. A noseless face has had spite wreaked upon it: it looks the part of vengeance. Such an appearance should be the aspiration of few.

If I have any prescience I fancy this discussion may be classified as being of a type similar to that iterated asseveration regarding the paucity of plantains. It has, however, the merit of sincerity and is submitted simply as a brief plea that we go, whichever is justified, not too far, or far enough, in our quest.

Dr. Whitney—Gentlemen, the subject is open for general discussion. * * * Dr. Baker, will you say a few words in closing?

Dr. Baker—In closing, I wish to thank Dr. Eakins and Dr. Lounsberry for their very able discussion of this paper. Eakins in particular has long been regarded by me as one of the very wise ones in the business. He is, so to speak, my grandfather and anything that comes from him is worth recording.

Dr. Whitney—We will now have a recess for luncheon.

Afternoon Session.

Dr. Toulmin—Mr. President, I suppose that the motion that I have to offer should properly come at the end of the meeting, but I am offering it at this time for a reason you will all appreciate. I want to offer it when the representatives of all the companies are present in this room. I know each one would like to second it and I am offering it now because I know that at the end of the afternoon there will be still fewer here than there are at present.

I want to present two motions. The first is that this Society wishes to thank Mr. Hasbrouke, a friend of Dr. Whitney's and a member of the Manhattan Club, for making it possible to hold the banquet at the Manhattan Club last night.

The motion was seconded and carried.

Dr. Whitney—I am sure Mr. Hasbrouke will be delighted if the Secretary would send him a little note of thanks.

Dr. Toulmin—The other motion which I wish to offer, gentlemen, is that we extend our thanks to the Home Life who have so very delightfully entertained us during our meeting.

The motion was seconded and carried.

Dr. Whitney—Well, gentlemen, I know if Mr. Low were here that he would say that he was delighted that you had succeeded in having as good a time as you had under the difficulties under which you were working.

Dr. Hobbs—Mr. President, may I make a motion? I

wish to say that we are all, I am sure, well acquainted with the most excellent work and valuable services of Miss Emily A. Walker in connection with the meetings of this Association and the Executive Council. Unfortunately for us, other demands on her time have compelled her to resign the position she has so long held in the Association of Life Insurance Medical Directors. I therefore move that we hereby express through our Secretary to Miss Walker our sincere appreciation of her valuable services rendered and our deep regret that she finds it necessary to resign a position which has earned for her the esteem of us all.

The motion was seconded and carried.

Dr. Whitney—We will now have the paper on "Non-medical Life Insurance" by Dr. Scadding and Mr. V. R. Smith. Dr. Scadding.

Dr. Scadding—Mr. President, I think you can be accused of the enormity of leading a disorder. I think the President has gone further; I think he has made a fatal mistake. This is rather immature. I would rather much prefer to delay making any contribution on this subject for two or three years, but the President was very insistent. But I took the precaution of asking Mr. Smith, one of my good friends in another company, to associate himself with me in giving you what we possibly could, because I thought it might be of interest. The paper which has been prepared by Mr. Smith and myself is on "Life Insurance Without Medical Examination."

LIFE INSURANCE WITHOUT MEDICAL EXAMINATION IN CANADA

DR. H. CRAWFORD SCADDING, MEDICAL DIRECTOR OF CANADA LIFE ASSURANCE CO., AND V. R. SMITH, ACTUARY OF CONFEDERATION LIFE OF CANADA.

Although the experiment of selecting lives for life insurance without medical examination was discussed in May, 1921, and reported in Volume XXII of the Transactions of the Actuarial Society of America, yet this discussion as applied to the American Continent was largely a matter of theory, since only five of the Canadian companies had at that time adopted this method of selection and had little or no actual experience. A review of the development in Canada of the non-medical system of selection may not be inopportune at the present time, especially as the system is spreading in the United States and as the Canadian companies are extending their previous limits as to age and amount.

During the years 1919 and 1920 Canadian companies had begun to discuss ways and means of dealing with applications for life insurance without obtaining a report from a medical examiner, the question being forced upon their attention by the increasing difficulty in obtaining the medical examination in practically all parts of the Dominion, but especially so in the more sparsely settled parts of the country.

The opinion was held that since a large percentage of the applications for life insurance originated from first-class lives, it was possible to institute some system of selection which would enable the companies to accept such without medical examination.

A study of the English schemes, which had been instituted about a quarter of a century previously, gave weight to this belief since the English companies doing this class of business might be numbered among the leading companies of the world.

This opinion was the more strongly held when it was noticed that these same companies noted for their soundness and conservatism had steadily and gradually removed one restriction after another until it was possible for a man under 50 years of age to obtain a policy for a large amount without medical examination on the same terms as if medically examined.

In the closing months of 1920 much difficulty in obtaining medical reports in some localities was experienced. Certain medical combinations were entered into whereby the members refused to complete the medical reports for the regular fees, requiring in many cases double the regular fee. Discussion crystallized into action and there followed the announcement by several companies of life insurance without medical examination.

If the mind is allowed to dwell solely on all the dangers that may be encountered in issuing life insurance without a medical examiner's report, the unfavorable possibilities are such as to raise the question of the wisdom, if not the feasibility of such a policy. On the other hand, it should be remembered that, at most, the report of the medical examiner in the field covers but five out of a possible ten factors that need to be considered when determining the eligibility of an applicant for life insurance, viz, the physical condition, the family and personal history, the height and weight and the habits. Of these five, the height and weight can be obtained as readily and probably as accurately from the non-medical questionnaire while the report as to habits is generally only available when the applicant is known to the examiner. The question of habits may be covered by obtaining an inspection report in all cases from one of the commercial reporting companies. The medical report as to family and personal history may be of greater value by virtue of the greater accuracy and exactness with which the answers may be expected to be given to the questions of a skilled physician. Of the five

factors, therefore, the only one which is of supreme importance is the physical condition of the applicant at the time of making application for the insurance.

Moreover, when the companies instituted the system, it was believed that the applicants, knowing that the contract would be based upon the truth of their answers rather than upon the ability of the examiner to detect any impairment, would be careful and particular in their replies. Such has generally proved to be the case and the companies have many actual cases where the information given by the applicant in the non-medical questionnaire has been fuller and more accurate than in the subsequent or previous medical form completed by the examiner on the same life. For the most part, therefore, full information has been given or been readily available, both as to the family and personal history.

Furthermore, it was believed that the excess mortality under the non-medical system would arise principally in accepting risks of the following character: First, those suffering from early or latent tuberculosis; second, those with impaired hearts; third, those suffering from an impairment which would be disclosed by an urinalysis.

Early or latent tuberculosis is more frequently missed than discovered by the average examiner. Most doctors will readily admit the difficulty in detecting an impairment of this character in the time usually given to the average insurance examination and by the ordinary methods of examination. Accordingly, the companies felt that though some of these might be accepted that would have been eliminated by the medical examiner's report, the number would not be greatly increased. With regard to heart impairments, undoubtedly these cases will be accepted at standard rates when the medical examination would have eliminated them, yet it was believed that by limiting the age the increased number that would be accepted would not appreciably affect the resulting mortality.

These same remarks apply with equal force to the group

of impairments that may be expected to be disclosed by an urinalysis. In fact, in some companies it is only in comparatively recent years that an urinalysis has been obtained for small amounts of insurance. The inclusion of the urinalysis does not seem to have made any distinct difference in the mortality strain. Some companies, doing a nonmedical business, have endeavored to obtain a measure of protection from this danger by directing the agent to forward a specimen of the applicant's urine with the non-medical questionnaire. These companies are still in the minority. Most of the others have deemed it unnecessary. Where fraud is intended, such samples are obviously valueless.

By limiting the amount it was believed that the element of fraud would not often and could not seriously enter into the consideration of the risk; that an applicant would seldom endeavor to defraud for the sake of a small amount of insurance; and that if fraud were intended, he would probably try to pass the medical examination with a view to obtaining a larger amount of insurance and a greater security in the possession of the policy, should one be issued.

A study of the effect of the medical examiner's report on the factors of selection convinced some of the Canadian companies that life insurance without a medical examination within certain limits might be done as profitably as if the risk had been medically examined.

It was believed that sufficient protection might be given the company to enable it to obtain a satisfactory mortality strain by limiting the amount of insurance, by limiting the age, obtaining the completion of a questionnaire by the applicant making definite and exact statements as to his past and present state of health, his family history, his habits, his height and weight and the duration of his active employment, time lost through sickness, etc., and, by obtaining an independent inspection report in all cases.

In addition to the points above mentioned there still re-

mained to be considered the question of avoiding any personal adverse selection on the part of either agent or applicant. With a view to reducing this as much as possible, the agent was required to submit on the non-medical basis all applications within the limits as to age and amount. No option was given either the agent or the applicant to elect medical examinations.

It was believed that making the basis as broad as possible would tend to ensure a better mortality strain, yet the fear was expressed that an undesirable risk would endeavor to obtain a considerable amount of insurance by going to many companies. With a view of eliminating this danger the companies set up a central bureau to which the name, date of birth and occupation of each "non-medical" applicant were immediately reported by each company. The bureau, in turn, immediately advised all companies receiving an application from the same individual.

While the theory of life insurance without medical examination appeared to be quite sound, yet it was felt the result of actual practice might be quite different. Caution, therefore, was exercised in putting the scheme into force, so much so that the safeguards set up were probably unnecessarily restrictive. In the beginning the regulations of the various companies generally provided:

1. That the amount of insurance should be limited to $1,000 without any provision for subsequent similar applications on the same life.

2. That the applicants accepted must be within the age limits of 20 and 45.

3. That all applications arising within the limits of age and amount must be submitted on the non-medical basis.

4. Generally no urinalysis was required but in one or two companies the agent mailed a sample to head office.

5. A medical examination generally required where the applicant had lost time recently from work due to illness or accident, or where an impaired family or personal history made such action advisable.

6. An independent report from an inspector not on the company's staff required in every case.

These restrictions have been changed from time to time and the present practice will be dealt with later in the paper.

The practice of the companies in insuring men without medical examination has been fairly uniform, but the same cannot be said of insuring women. Many companies have insured unmarried women as freely without medical examination as if examined, but have required a full medical examination of married women. On the other hand, one or two companies, believing that for several reasons medical examination of women, whether married or not, was incomplete and perhaps superficial, have accepted married women without examination.

With a view to increasing the protection against an adverse selection, the companies have made no distinction as to premium rates, surplus distribution and policy conditions and have paid the same commissions to agent. The total and permanent disability benefit and the double indemnity accident benefit have been added to the policy contract on the same basis as for medically examined business.

Such was the experiment begun by some of the Canadian companies, and so successful has been the result that the practice has become general in Canada and is being adopted by many companies in the United States. Some indication of the extent to which the business is being done in Canada is shown by the following table:

AMOUNT OF NON-MEDICAL BUSINESS IN FORCE AS OF THE 31ST OF DECEMBER FOR THE YEARS 1921-1924 AND THE AMOUNT OF CLAIMS INCURRED IN EACH YEAR

	1921		1922		1923		1924	
Cos.	Business In Force	Claims	Business In Force	Claims	Business In Force	Claims	Business In Force	Claims
A.	3,153,550	3,000	8,408,065	16,000	14,068,104	25,421	20,167,752	48,013
B.	4,231,061	5,000	9,328,483	17,000	18,813,835	22,980	29,532,177	55,980
C.	—	—	1,880,400	nil	7,974,200	14,000	17,553,775	36,000
D.	—	—	—	—	2,719,864	1,000	7,929,000	21,500
E.	—	—	2,365,905	1,000	18,649,599	26,000	44,033,032	78,500
F.	—	—	2,404,264	1,000	8,551,647	11,730	15,906,705	28,341
G.	654,585	nil	1,895,960	1,000	5,546,960	6,000	9,680,000	10,390
H.	559,000	2,000	1,697,705	4,000	3,786,205	6,000	5,499,500	8,500
I.	—	—	—	—	4,868,929	nil	7,176,126	11,000
J.	420,000	nil	1,026,900	nil	3,480,000	2,000	6,757,445	11,000
K.							2,329,200	8,580
L.							2,008,637	4,000
M.							1,255,220	nil
Total	9,018,196	10,000	29,007,682	40,000	87,459,343	115,131	169,828,569	321,804

It will be noted that the business has grown from $9,018,196 in force at the end of 1921 to $169,828,569 at the end of 1924 without including the business of a few of the companies who have not kept separate statistics of the non-medical section.

The question has been asked—What percentage of the business issued by the Canadian companies is on the non-medical basis? An answer cannot be given with exactness as many of the companies have only recently undertaken this class of business and have not kept separate statistics, but perhaps the experience of one company doing a non-medical business freely may serve to give an approximate answer. In 1921, the company in question issued, without medical examination, in Canada 37% by number and 19% by amount of its total Canadian business and the respective percentages were 62% by number and 39% by amount in 1922, 67% by the number and 45% by amount in 1923, 67% by number and 47% by amount in 1924. The increased percentage of non-medical business in 1922 is believed to be due mainly to the increase in limits as to amount and age accepted without medical examination.

Some indication of the growth of the business, *i. e.*, as to the number of applications, though not as to amount, may be obtained from the following table, showing the number of applications reported to the Central Bureau, now discontinued:

TOTAL NUMBER OF APPLICATIONS REPORTED TO THE CENTRAL BUREAU SINCE JANUARY 1ST, 1921

Date	No. of Reporting Cos.	No. of Applications	Number Reported by 2 Cos.	3 Cos.	4 Cos.	5 Cos.	6 Cos.
Jan. /22	5	12,220	23	—	—	—	—
July /22	8	22,118	85	2	—	—	—
Jan. /23	10	43,558	342	7	1	1	—
July /23	13	78,047	992	34	8	3	—
Jan. /24	14	119,390	2,154	67	11	3	1
July /24	15	167,237	4,005	143	21	5	1
Jan. /25	15	212,200	6,105	257	27	7	2

In 1921 some fear was expressed that the poor risks would endeavor to obtain, by fraud, insurance from several com-

panies. It was generally agreed that there was very little likelihood of an applicant committing any serious fraud for the sake of a small amount of insurance, whereas such might not be the case were he able to apply to several companies, thereby obtaining a considerable total of life insurance. The above table indicates how groundless the fears were, and bears out the old story—"Men do not buy life insurance, they are sold." Apparently in a period of over four years but one man in twenty-five applied to two companies, and but one out of eight hundred applied to three companies.

On January 31st, 1925, the companies discontinued the bureau, deciding that the expense and trouble were not warranted. Since practically all the companies were obtaining an inspection report from the Retail Credit Company, arrangements were made with that company to note on the bottom of the report whether an inspection had been made to another company under a non-medical application. The companies felt this would give them all the protection required, especially if direct questions on this point were included in non-medical questionnaire, such as "Have you recently obtained any life insurance without medical examination? If so, how much and when?"

When the companies undertook to accept insurance without medical examination, they expected that the unexamined business would produce a higher mortality than normal. Various estimates were made, varying from a constant extra mortality of 20% to an extra of 100% in the early policy years, rapidly dropping to standard in the fifth to the tenth policy year. Perhaps the most generally accepted prognosis was that made by Mr. Arthur Hunter, who stated—"There will naturally be a great deal of difference of opinion as to the probable incidence of the extra mortality, but it will generally be agreed that after a few years the group will be approximately as good as those who have been accepted in the usual way."

A short time ago the writers directed an inquiry to all the

companies engaged in the non-medical business in Canada as to the ratio of actual to expected mortality calculated either on the basis of an ultimate table such as the H^m or the $O^m(5)$ and also on the basis of the Canadian Men's Select Table of Mortality as published in 1918 as a result of the American-Canadian Mortality Investigation. Some of the companies were unable to give the information, but sufficient statistics were forthcoming to indicate that the mortality was light and well within the limits of the table. It would seem, therefore, that it is possible to select risks for life insurance without medical examination so as to experience as favorable a mortality as that expected by the Canadian Men's Select Table of Mortality, and that the expectation of an extra mortality as held in 1921 has so far not materialized.

The following table shows that the companies have every reason to be satisfied with the ratio of actual to expected mortality:

RATIO OF ACTUAL TO EXPECTED MORTALITY

	1921		1922		1923		1924	
Cos.	Ultimate Table	C. M. Select Table	Ultimate Table	C. M. Select Table	Ultimate Table	C. M. Select Table	Ultimate Table	C. M. Select Table
A.	25%	69%	35%	90%	27%	55%	34%	78%
B.	32	85	35	90	23	54	33	74
C.	—	—	—	—	—	—	35	89
D.	—	--	—	—	no claims		26	66
E.	123	—	51	—	25	—	21	51
F.	no claims		10	26	20	53	—	—

In studying the above table the question arises as to the degree of protection given by The Medical Impairment Bureau in non-medical cases. Undoubtedly considerable protection has been given in certain classes of risks. The question has been asked what will be the effect of the lack of this protection as the volume of non-medical business grows. Time alone will answer the question, but it should be remembered that on the average the companies are perhaps obtaining fuller information regarding the personal and family history and

are reporting any impairments. In cases of early or latent tuberculosis, impaired hearts and genito-urinary impairments, the companies have expected to accept some of these risks at standard rates where the applicants did not know they had the impairments in question. The companies expect but little fraud with these cases, provided the amount accepted is not increased to the extent that there might be an incentive to suppress material information. Accordingly the protection given by the impairment bureau will probably prove not to be so important a factor as might be expected.

One of the companies that obtains a sample for the purpose of making an urinalysis states that the findings disclosed by the urinalysis has resulted in a fairly large percentage of declinations and has eliminated some very bad risks as revealed by a subsequent examination. Further, the company in question estimates that it would require only a moderate extra mortality above the normal, among those declined by reason of the urinalysis to provide for the expense of the urinalysis.

Perhaps it is unfair to compare the ratio of actual to expected mortality of the business medically examined and the business accepted without medical examination, for the reason that the medical business included the risks on the lives of minors; of those over 45 or 50 years of age; of those believed to have been impaired risks as at the date of the examination and all those applications for amounts above the limit accepted without medical examination. The comparison may serve, however, as an indication of the success of the companies in selecting business without medical examination as compared with their success in selecting the business medically examined. Generally speaking, the effect of selecting a poor risk medically examined is more serious than one not examined by reason of the limited amount accepted in the latter case. Few companies had this data in the form in which this information was readily available, but the following comparison is given for what it is worth:

RATIO OF ACTUAL TO EXPECTED MORTALITY UNDER BUSINESS ISSUED IN THE SAME PERIODS, BOTH WITH AND WITHOUT MEDICAL EXAMINATIONS

Table Mortality	Company	1921 Non-medical	1921 Medical	1922 Non-medical	1922 Medical	1923 Non-medical	1923 Medical	1924 Non-medical	1924 Medical
H^m	A	122.5	45.5	50.8	26.4	24.4	26.7	21.1	28.2
C^m	A	—	—	—	—	—	—	51.5	62.9
$O^m(5)$	B	24.7	37.0	34.5	37.3	27.2	33.8	33.8	39.3
C^m	B	69.3	98.2	90.1	89.2	66.4	73.6	77.5	80.9
$O^m(5)$	C							26.1	32.7
C^m	C							65.9	76.8

N. B.—The comparison has been made on the business issued in the same years, for instance the 1924 result for company "A" covers the claims occurring in 1924 under non-medical business issued in the years 1921-1924 inclusive and under the medical business issued in the same years.

These results would seem to indicate that three companies at any rate had been able to select their non-medical business as efficiently as the business medically examined.

It is difficult, if not impossible, to obtain an exact comparison between the mortality arising from the unexamined business and the mortality that would have arisen had the lives been selected after a medical examination. The all important question is, would the claims, that have occurred, have been eliminated by a medical examination. One company has reviewed all its claims and in the opinion of its medical advisers but $7,000 out of $92,434 *would* have been eliminated, while but an additional $3,000 out of the same total *might* have been refused or rated had a medical examination been made. The following schedule shows the claims incurred by company "B," having a mortality well within the expected according to the Canadian Men's Select Table of Mortality:

NON-MEDICAL DEATH CLAIMS

Amount	Sex	Date of Issue	Date of Death	Cause of Death	Length of Time Symptoms Existed
1000	M. S.	28. 1.21	4. 7.21	Fracture of spine	2 1/2 days
1000	M. S.	14. 1.21	22. 7.21	Intestinal and laryngeal tuberculosis	5 or 6 months
1000	M. S.	18. 7.21	11. 9.21	Epidemic enteritis	5 days
1000	M. S.	12. 9.21	12. 1.22	Railway accident	Death instantaneous
1000	M. M.	7. 4.21	18. 3.22	Carcinoma of stomach	6 months
1000	M. W.	10. 3.21	2. 3.22	Cancer of liver	Doctor in attendance 2 and 3 months, exact duration of illness not known
1000	M. M.	30. 3.21	7. 4.22	Pulmonary tuberculosis	6 months
1000	M. S.	26. 1.22	30. 5.22	Accidental drowning	—
2000	M. S.	27. 5.22	18. 6.22	Accidental drowning	—
1000	M. S.	15. 7.21	14. 7.22	Lobar pneumonia	4 days
1000	M. M.	30. 3.21	23. 8.22	Pneumonia	6 months
1000	M. S.	27. 7.21	31. 8.22	Fracture of skull	12 hours
2000	M. M.	13. 9.22	21.10.22	Typhoid fever	1 month
1000	M. M.	5. 7.21	15.11.22	Railway accident	1 hour
1000	M. M.	27. 7.22	7.10.22	Automobile accident	Death instantaneous
1000	M. M.	8. 4.21	19.11.22	Pleuropneumonia	8 days
1000	M. S.	25. 3.22	25.11.22	Pulmonary tuberculosis	6 1/2 months
500	F. S.	21. 6.21	13.10.23	Pulmonary tuberculosis	1 year 10 months
500	F. S.	4. 7.21	20. 3.23	Typhoid fever	20 days
1000	M. M.	17. 9.21	8. 1.23	Acute nephritis	2 months
1000	M. M.	21.10.21	22. 1.23	Spinal syphilis	1 month (treated for 2 years)
1000	F. S.	4.11.21	14. 6.23	Influenza	Symptoms 10-12 weeks, final illness 6-7 weeks
T 1000	M. M.	12.12.21	23. 8.23	Pyelonephritis	5 or 6 months
500	F. S.	6.12.21	20. 3.23	Typhoid fever	20 days
X 2000	M. M.	20. 3.22	9. 6.23	Chronic nephritis	4 months
2000	M. S.	17. 5.22	17. 1.23	Gunshot wound—accidental	2 hours
1000	M. S.	23. 5.22	10. 1.23	Accidental—falling tree	6 hours

NON-MEDICAL DEATH CLAIMS

	Amount	Sex	Date of Issue	Date of Death	Cause of Death	Length of Time Symptoms Existed
	1000	M. M.	15. 6.22	27. 7.23	Influenza, nervous pros'n, melancholia, suicide by shooting	Influenza 6 months ago
	1000	F. M.	29. 6.22	23.11.23	(Typhoid fever (Acute nephritis	3 weeks
T	1000	M. S.	10. 8.22	8.10.23	Lymphosarcoma of tonsil	Symptoms 1 year 7 months, last illness 1 year
	2000	M. S.	19. 8.22	3. 1.23	Ulcerative endocarditis	5 weeks
	1000	F. S.	7. 9.22	28. 2.23	Meningitis following influenza	19 days
	1000	M. M.	1. 9.22	23. 8.23	Pyelonephritis	6 months
	487	F. S.	5.10.22	13. 7.23	Septic meningitis	1 month
	1000	M. M.	22.11.22	15. 3.23	Thrombosis of coronary arteries	Symptoms not known, last illness 4 hours
	1000	F. S.	22.11.22	2. 1.23	Railway accident	1/2 hour
	1000	M. S.	8.12.22	15.10.23	Pulmonary tuberculosis	Symptoms 6 months, last illness 3 months
	1000	M. S.	2. 5.23	12. 8.23	Acute malaria	Not stated
	2000	M. M.	2. 6.23	2.12.23	Carcinoma of stomach	3 months
	1500	M. S.	15. 8.23	28. 8.23	Railway accident	Death instantaneous
X	1000	M. M.	24. 3.21	1. 2.24	Pulmonary tuberculosis	18 months
	1000	M. S.	5. 4.21	29. 9.24	Railway accident	—
	1000	M. M.	23. 5.21	30. 3.24	Duodenal ulcer	2 years
	1000	M. M.	22. 7.21	16. 5.24	Typhoid fever	2 weeks
X	1000	F. M.	27.10.21	12. 8.24	Cerebral apoplexy	2 years
	1000	M. S.	2.11.21	8. 2.24	Pulmonary tuberculosis	1 year
X	1000	M. M.	6.10.21	24. 8.24	Pulmonary tuberculosis	Several years
	1000	M. M.	1. 6.21	28. 7.24	Suicide	—
	1000	M. S.	28.12.21	9.11.24	Pericarditis	1 month
	1000	M. M.	17. 1.22	19. 9.24	Angina pectoris	Few minutes
	1000	M. M.	24. 1.22	18. 7.24	Tuberculosis	—
	1000	M. M.	15. 3.22	24. 6.24	21 months	Bronchopneumonia
	2000	M. S.	9. 5.22	30.12.23	Railway accident	12 days

NON-MEDICAL DEATH CLAIMS

	Amount	Sex	Date of Issue	Date of Death	Cause of Death	Length of Time Symptoms Existed
	2000	M. M.	5. 4.22	15. 5.24	Accidental gunshot wound	—
	1000	M. S.	20. 7.22	23.11.24	Accidental drowning	—
	2000	M. M.	12. 8.22	24. 2.24	Brain tumor	5 months
	1000	F. W.	15. 8.22	30. 5.24	Mastoiditis	3 weeks
	1000	M. M.	14. 8.22	26.10.24	Bronchopneumonia	1 week
	1000	M. M.	14.11.22	28.11.24	Toxaemia	3 months
	1000	M. M.	2. 1.23	11. 2.24	Lobar pneumonia	5 or 6 days
	2000	F. M.	3. 1.23	14.11.24	Eclampsia	Few days
	1000	F. S.	22. 2.23	30.10.24	Pulmonary tuberculosis	7 months
T	1000	M. S.	1. 6.23	16. 6.24	Intestinal tuberculosis	5 months
	1000	M. M.	26. 5.23	10. 5.24	Fracture of skull	1/4 hour
	1000	F. S.	29. 5.23	5.11.24	Diphtheria	1 week
	700	F. M.	29. 5.23	26.11.24	Intestinal perforation	3 days
	2000	M. M.	10. 5.23	18. 2.24	Acute encephalitis	Symptoms 3 months, last illness 15 days
	2000	M. S.	6. 8.23	24. 1.24	Influenza	2 weeks
X	2000	M. M.	4. 9.23	17.11.24	Pulmonary tuberculosis	2 years
	1000	M. M.	4. 9.23	19. 8.24	Motor accident	—
X	1000	F. M.	22.10.23	26. 2.24	Chronic nephritis (?)	2 hours (last illness)
	1000	F. S.	21. 8.23	20. 4.24	Acute miliary tuberculosis	Symptoms 5-6 weeks, last illness 8 days
	2000	M. M.	17.10.23	26. 8.24	Sarcoma of right lung	6 months
	1000	M. M.	13.10.23	10. 5.24	Infective endocarditis	6 months
	1000	M. M.	7.11.23	23. 7.24	Pneumonia	1 week
	1000	F. M.	1.11.23	25. 6.24	Puerperal peritonitis	4-10 days
	1000	F. M.	9. 1.24	8. 6.24	Embolism parturition	5 days
	2000	M. S.	4. 3.24	14. 3.24	Railway accident	—
	1000	M. M.	5. 1.24	9.12.24	Automobile accident	—
	2000	M. S.	25.11.24	26.12.24	Appendicitis with abscess	6 days

X indicates the risks that, in the opinion of the Company's medical adviser, would have been declined after a medical examination.

T indicates the risks that probably would have been eliminated or rated after a medical examination.

It might be of interest to examine the record of two companies that had the data available as to the percentage of cases accepted and declined, whether without or with medical examination.

Curiously enough the percentage of medically examined applications declined by these same companies averaged approximately the same as for the non-medical business.

The following table would show that these two companies were accepting approximately 90% of the non-medical applications made to them without reference to the medical examiner—a much higher percentage than was anticipated when the system was inaugurated:

Non-medical Applications	1921		1922		1923		1924
	Co. A	Co. B	Co. A	Co. B	Co. A	Co. B	Co. A
Without examination	92.5	88.6	93.0	87.5	91.8	87.1	92.7
After examination:							
Standard	3.0	5.1	2.8	6.1	3.2	5.8	3.4
Substandard	1.0	1.0	.8	.8	1.0	1.2	1.0
Declined:							
Without examination	2.0	3.7	2.4	4.0	1.3	4.1	.8
After examination	1.5	1.6	1.0	1.6	2.7	1.8	2.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

In 1921 the fear was expressed that the introduction of the non-medical business would increase the number of disputed claims, thereby leading to increased litigation. Such does not appear to be the case and so far no non-medical claim has been carried to the courts. On the other hand, the companies have had little difficulty in settling claims when material information was suppressed or not disclosed.

There is still considerable difference of opinion whether insurance without medical examination reduces the average amount of the policy issued, but the view generally held appears to be that the average policy is reduced. While this may not be a bad result since the business is spread over more lives, yet the recent increase in the amount that will be

accepted under the first application or within the first year will tend to eliminate this criticism.

Fears have been expressed from time to time as to the effect on the examiners in the field. At first some of the examiners were hostile, but as a whole the medical examiner took the view that the companies were justified in eliminating the medical examination in such cases as the companies felt might be accepted without his opinion. Some thought the lack of examinations would cause the average doctor to lose interest in the work and even to do this work less efficiently. Such would not appear to be the case. The office of medical examiner is as eagerly sought now as in the past, and the work is as carefully and well done as ever. It should be remembered that the medical examiner has not been eliminated entirely but merely that fewer risks are referred to him for examination.

In 1921, the effect on the agency forces was regarded with apprehension, some companies fearing that the fieldman would be disturbed, that he would be unwilling to undertake the extra clerical work of completing the questionnaire required in lieu of the medical examination, that he would object to the added responsibility and that he would gravitate to the company doing only a medical business. Such fears have proved to be groundless. It is true that objections were raised by individual agents but these soon disappeared. If the home office was enthusiastic and optimistic regarding the result of the non-medical business, the field force readily fell in line, but if the home office was doubtful and fearful of the experiment, then the man in the field did not like the business and generally at first offered objections.

The fact that more and more Canadian companies have undertaken this class of business, increasing from five in 1921 to seventeen in 1924, would seem to support the frank statement of the actuary of one company, viz:

"We were one of the last companies to start the non-medical business and prior to writing business on the non-medical application form we had complaints from our field force that they were handicapped and losing business to other companies who were not requiring a medical examination. Our field force at the present time appear to be well satisfied with the non-medical business and they would not care to revert to the old system of examination, even if all the companies were to follow the course of insisting on a medical examination. Taking the non-medical business as a whole, we are exceptionally well satisfied with it and feel quite satisfied that the success of the experiment is assured."

Perhaps agency opinion may be said to be most enthusiastic in the rural districts, even those lying contiguous to a large city, but to be luke warm in the large cities where it is comparatively easy to obtain a medical examination. The chief criticism is the tendency on the part of some agents to be satisfied with smaller policies, the unwillingness of some of the older agents to shoulder the increased responsibility of the non-medical questionnaire, but the principal objection is the difficulty of increasing the amount of insurance at the time of delivery of a policy obtained without medical examination. These objections will tend to disappear with the wider limits within which the business is now being accepted. Perhaps, if proof were available that no adverse selection would arise in giving the agent or the applicant in the cities the option of taking a medical examination or not, the companies would amend their regulations accordingly. One company is giving such an option and as its experience in this respect will be most interesting, it is to be hoped that the information will be made available in due course.

On the whole, it may be said that the Canadian companies are well satisfied with their experiment, that they believe the advantages more than balance the few inconveniences in the

cities, but perhaps the most striking proof of their opinion has been in the steady increase in the limits both as to age and amount that the companies are now prepared to accept without recourse to a medical examiner's report. Since the companies' experience has continued to be favorable, competition has been permitted to decide to a certain extent the limits of the business, but undoubtedly there is a danger in this respect, not so much from the standpoint of pure life insurance, but rather from the direction of the total and permanent disability monthly income benefit. As the amount increases, carrying with it, a noncancellable sickness policy giving distinct and valuable advantages to the policyholder while living, the adverse selection is bound to increase and the incentive to fraud becomes a serious danger to be carefully guarded against.

An effort was made to determine whether there had been any greater number of disability claims arising out of the non-medical business. While the statistics available did not permit a conclusive opinion to be drawn, yet the result is such as to cause hesitation in increasing the amount of monthly disability benefit accepted without medical examination. Statistics for one company were available and though the group was small the trend seemed unmistakable, viz, that there was a considerably greater strain from disability claims in the non-medical section.

As a matter of interest, the present practice of the majority of the Canadian companies is given in the following table, but no attempt has been made to give more than the broad outline of the regulations or to set out the various details in each company's practice:

PRACTICE OF CANADIAN COMPANIES AS AT SEPTEMBER 1, 1925

Cos.	Age Limits	First Policy Year	Limit of Increase	Maximum Limit	Intervals Between Successive Applications	Urinalysis Required	Married Women Accepted Under Non-medical
A.	15-45	$3,000	$1,000	No limit	One year	No	Yes
B.	15-45	2,000	—	$2,000	—	Yes	Yes
C.	15-45	2,000	2,000	No limit	One year	No	No
D.	15-45	2,000	—	2,000	—	No	No
E.	15-45	2,000	2,000	4,000	One year	Yes	No
F.	15-45	2,000	No rule	No limit	One year	No	No
G.	15-45	3,000	3,000 m.	10,000 Male	One year	No	No
		1,000	1,000 f.	5,000 Female			
H.	15-45	5,000	2,500	10,000	One year	No	No
		2,500 T. D.	—	2,500 T. D.			
I.	15-45	2,500	—	2,500	—	Yes	No
		1,500 T. D.	—	1,500 T. D.			
J.	15-45	5,000 without T. D.	5,000	No limit without T. D.			
		2,500 with T. D.	—	2,500 with T. D.	One year	No	No
K.	17-50	5,000 Male	2,000				
		2,000 Female	2,000	10,000	One year	No	No
L.	15-45	2,000	1,000	3,000	One year	No	No
M.	15-45	2,500 Male	1,000				
		1,000 Female	—	No limit	One year	No	No
N.	15-45	2,000 Male	—	2,000			
		1,000 Female	—	1,000	—	No	Yes
O.	15-45	2,500	No rule	5,000	—	No	Yes
P.	15-45	2,000	2,000	4,000	One year	No	No
Q.	15-45	2,000	1,000	No limit	One year	No	No

Several years must yet elapse before the ultimate result of the experiment can be determined, but sufficient experience has been gained to give the strong feeling shared by all the companies that the business as now carried on is safe and profitable, that for amounts of two or three thousand dollars for ages at entry between 15 and 45, risks can be successfully selected without increasing the mortality strain of the company as a whole, that the mortality will probably continue to be within the limits of mortality expected even when based on a severe standard, that field men would object strongly if the system were discontinued and that the present trend toward extending the limits is likely to continue for some time, at least, in spite of the danger arising from the acceptance of larger amounts, and particularly the inclusion of the Total and Permanent Disability and Double Indemnity Accident Benefits with the consequent increased incentive to fraud.

Dr. Whitney—Dr. Rowley, will you kindly open the discussion?

Dr. Rowley—Mr. President and Members: We are all glad to have before us this splendid paper on a subject that is of increasing interest inasmuch as a considerable number of companies in the United States during the past year have taken up this plan of issuing insurance.

The idea has spread rapidly and in the short space of a few months has become popularized to the extent that some thirty odd companies—it may be in the forties now—are writing insurance without medical examination.

The Phoenix Mutual began on January 1 of this year to issue insurance without medical examination in amounts not in excess of $2,000 on one life.

There was some demand from the sales force for a provision for building an insurance program in many instances on the basis of multiples of $2,500 of insurance and, accordingly, the amount of insurance that could be issued without

examination was raised from $2,000 to $2,500 about April 1, 1925.

The officers of the company were quite well satisfied with the way this business was being handled by the sales force and as an indication of a little increased enthusiasm for the plan, the maximum amount of insurance to be issued on one life was increased to $5,000 about July 1.

In the Phoenix Mutual the limitations as to age, plan, etc., have been similiar to those that have prevailed in the Canadian companies. For example: the age limits are fifteen to forty-five, inclusive; as to plan, any form of Life or Endowment, male risks are accepted and also self-supporting unmarried female risks. This plan applies to only standard lives. Risks thought to be substandard for any reason are required to have a medical examination.

When this plan was first under consideration there was the feeling that the average amount of insurance on each policy issued by the company would be reduced; only a slight effect in that direction has been noted. Of the policies issued without medical examination when the maximum limit was $2,000 the average was $1,515. When the maximum amount was $2,500, the average was $1,618. Since July 1 with a maximum of $5,000 the average has been $2,289.

We shall all be interested in mortality studies on this business when the exposure has been long enough and the volume of business great enough to lend value to such studies.

The Phoenix Mutual has had thus far only six claims on some nine thousand policies. Of those six claims, five appear to be clear and legitimate and three of them were due to accidental causes which number seems to be out of proportion to what would be expected from that cause.

There has been only one case where an examination could be expected to reveal the fact that the risk was not a desirable one and in that case payment of the claim has been withheld,

at least temporarily. That was a case of chronic empyema, which was accepted for a policy of $1,000.

On this comparatively small amount of business with short exposure the actuaries have roughly estimated that, according to the American Men's Select Table the expected number of claims would be about ten. Our experience so far is satisfactory in that we have had six claims, of which three were due to accidental causes.

We reserve the right, as do other companies, to call for a medical examination in any case where it seems to be particularly indicated, but we have been surprised at the small number of cases in which we have called for an examination, about 2 1/4% in our experience so far.

Our rejection rate on this business has been quite small, about 3 1/4%, and we have asked ourselves these two questions: Does it mean that these cases are being presented to us in a more favorable light than the facts really warrant, or does it mean that the salesman in the exercise of the function of primary selection gets a truer concept of the insurability of his cases than when depending upon a medical examination and the unacceptable and even doubtful cases are to a larger extent eliminated by him. We feel in our company that the latter factor is the more potent of the two in effecting our low rejection rate.

Approximately 94% of the cases presented to us are found to be acceptable without medical examination and about 2% of the cases have been issued at standard or substandard rates after medical examination.

We were interested to see to what extent we were leaning on the Medical Information Bureau in our action on these cases and I imagine that is a matter in which a good deal of interest will be manifested in the discussions here this afternoon, in the group of cases to which insurance was issued on the substandard basis, about one-half by number, had M. I. B. information that led us to make further investigation

or that influenced us in our final judgment of the risk. However, of the cases in this group in which we called for a medical examination, the Medical Information Bureau put us on our guard in about one-third of the instances, and the applicant's own statements in about two-thirds of the instances.

In the group of rejected cases we found much the same situation to prevail as relates to the frequency of the M. I. B. information and its being the reason for our having examination made. This means that our judgment of risks is influenced and our action modified through information in the application itself about twice as frequently as is done through information from the Bureau.

We find, therefore, that in conducting this business without the aid of medical examinations we are able to make substantial contributions to the Bureau and are not parasites upon that service to any serious extent.

One must remember that the contributions to the Bureau made by the member companies vary a good deal as to their value, depending upon the thoroughness with which they investigate all of the features presented and of the questionable points in the personal history of the applicant. For example, it is the practice of some companies to obtain an inspection report upon every case, and we know from experience that information which helps us to judge our risk correctly comes to us often from that source and such information may be the basis of our contribution to the Bureau.

It is obvious that a company that does not obtain inspections on all cases is not a contributor of information to the same degree as a company that does obtain those inspections.

The care that is exercised in the investigation of a given history varies greatly with different companies. Take for example a history of sugar in the urine. One company may obtain a specimen or two and if normal disregard the history,

and another company would go into the matter in a more thorough manner, and perhaps have a blood sugar study of the case made or at least a glucose test meal, and the value of the contribution to the Bureau by such a company would be quite different from the value of the contribution by the company that made little or no investigation.

Such illustrations as these need hardly be carried further, and I want to express my appreciation to Dr. Scadding and to Mr. Smith for having submitted to us in such a complete form all of the data that is available on this subject as yet so new to us, and for having presented it all in such interesting manner.

Before another year comes around, we are almost certain to see a considerable increase in the list of companies that have taken up this plan of issuing insurance, and I think time will demonstrate to us that the plan is safe when dealing with small amounts of insurance and is perfectly sound from a business standpoint.

When I hear amounts larger than $5,000 mentioned in connection with this plan, I cannot be so certain as to the element of safety because the factor of self-selection or of speculation increases very rapidly as the amount of insurance increases, and I hardly share the optimism which Dr. Scadding may or may not have meant to express in regard to our being called upon to deal with larger amounts of insurance under this plan in the future.

Dr. Whitney—Will Dr. Piper kindly continue the discussion on this paper?

Dr. Piper—Mr. President and Gentlemen: When we are told that a company on the non-medical basis has written a certain percentage of its business upon that plan, it does not mean that that is an increase in business which would otherwise not have been obtained, because it does not mean that that is an addition which is gratuitously obtained, but that it

is at the expense of some medical business which the company would otherwise have obtained. That is a question for the agency departments to determine whether the gain in the convenience and the potency of the application to the average insuring young man or young woman offsets the possible gain which we might have by having the business examined.

The response of our own agents has not been notably enthusiastic.

We accept no business on the non-medical plan submitted through the agent of another company or through any broker.

A paper of such excellence, based upon considerable experience, and conceived and written in such an admirable spirit of modesty invites no discussion. Any commentator with greatly restricted experience is obviously limited to an expression of individual opinion. With that understanding, therefore, we may briefly refer to one or two points to which attention might be directed.

Of the five factors out of a possible ten which may be covered by a medical examiner's report, let us consider two. It is questionable whether the height and weight can be obtained as readily and accurately by an agent as by an examiner. The experience of companies will be found to be variable, but in many companies approximately one-half of the applicants are examined in the office of the agency or of the examiner where exact weight is readily obtainable. We also frequently see cases obviously over or underweight which are taken to be weighed to nearby drug and grocery stores by intelligent examiners. It is doubtful whether the persuasive power or the inclination of an agent will be responsible for equally accurate figures or whether even estimates made by a layman will be as accurate as those made by an examiner. The measurements likewise taken by examiners should have a tendency toward greater accuracy inasmuch as the physician is usually more competent to instruct an applicant in

the mechanics of full inspiration and expiration. The point may be negligible, however, as at the home offices we are fairly well trained in estimating for ourselves height and weight when we are given the measurements, and it should be possible to request complete examination when the abdominal and chest measurements would suggest a weight materially greater than that given by the applicant.

In obtaining family and personal history, it is quite likely that the experience of an examiner would be responsible for more accurate opinions. An applicant might state that a parent died of lung trouble, which would easily be recognized by a physician as pneumonia when the applicant was questioned even briefly as to the symptoms and the length of the illness. Other causes of death simply given as "don't know" would appear with a positive diagnosis by an intelligent examiner directing inquiry as to the obvious symptoms and the length of illness. A limited experience would lead to full agreement with the statement made in the paper that applicants apparently have evidenced every intention of being careful and particular in their replies.

The point is made that only absolute ignorance of the exact diagnosis prevents their assistance in this particular direction equaling the assistance given by the examiner.

It is surprising to note the relative agreement between the actual and expected mortality of applicants accepted upon the non-medical basis and those examined. The point made by the essayist that the suggested increase in the mortality of the examined business might be due to the difference in ages at entry is, to our mind, the most reasonable explanation. It is likewise possibly a little early to form definite conclusions. In addition to that, might it not be possible that all of us selecting non-medical business, regarding it as an experimental practice and anxious to guard against an undue mortality, make our selection with unusual care and possibly undue severity? That is, we may request medical examina-

tions in cases which were even slightly suspicious and limit our acceptance to those cases which were apparently only first-class.

The favorable mortality also certainly owes something to the generally wise and reasonable restrictions which have been imposed. Limitations of amount, acceptance within certain age limits, and the necessity for submitting all applications within the age and amount limits upon the non-medical basis have certainly been important factors in contributing to the general success of this practice.

Just a word relative to the causes of death in the tables submitted by Company B. It would appear that there is an unusually large number of cases becoming claims on account of diseases of the respiratory tract. This is similiar to the experience in examined business and would seem to support the contention that in incipient cases of tuberculosis applicants especially prone to respiratory diseases are frequently passed by some of our best examiners. It would be highly interesting indeed to know whether these cases, accepted on the non-medical basis, were light in weight and whether the age entry were below 35 years. A tabulation covering these points might assist us engaged in selecting non-medical business to eliminate what seems to be a class contributing generously to increased mortality.

To conclude briefly with a few personal impressions concerning non-medical business.

We accept applicants from ages 15 to 45. The applicant must be capable of earning money for a living or an unmarried wage earning female employed outside of the home. Female factory workers or domestics are not accepted. Applicants will be accepted upon any plan except for Term or Joint Life, and must not be engaged in an occupation which would impose a rating. The privilege of writing non-medical business is not extended to all agents but only to those among the leading producers qualified for membership in a select circle.

All business written by an agent electing to write any non-medical must be written on that basis if within the limits prescribed by age and amount. At the present time, applicants are accepted only if they reside in states north of the northern border of North Carolina, Tennessee, Arkansas, Oklahoma, and Texas. No non-medical business is written in the states of Colorado, Iowa, Idaho, Nebraska and Washington, where legal restrictions prevent the use of this plan.

The response of our own agents has not been notably enthusiastic. This may possibly be due to an impression on their part that the plan was to be in force as a privilege and not as a recommendation. It is confidently expected that there will be increasing numbers of applications from month to month. As yet, no claims through disability or death have been received. Some agents have been very enthusiastic and others non-committal in their comment. A considerable number have expressed their conviction that the plan greatly conserves their time, enlarges their circle of acquaintances, and results in a greater number of policies accepted and paid for. A great many agents likewise believe that it is business which will remain on the books. Some agents have frankly stated that they have been approached by brokers and agents of other companies with a request that they write applications upon some of their applicants whom they knew to be impaired. In some cases, the applicants have been declined by other companies; in others, they simply had knowledge of their inability to pass a medical examination.

We have been surprised and gratified at the apparent response to the confidence which we have frankly said we placed in our agents in selecting such risks. Applications of certain individuals whom we thought possibly would bear close scrutiny, have proven to be apparently full and complete, and have supplied information which was later found to be accurate by means of examination and by virtue of existing codes.

There is still a question in our minds as to the probable

mortality to be experienced by companies in the United States. When we consider the fact that we are dealing with a greater number of urban residents who, in sophistication, may vary widely from applicants in the rural districts of our own country and Canada, it would not be surprising if our mortality would prove to be slightly higher if we believe that self-selection will bear any particular part in mortality statistics. We find ourselves in heartiest accord with the suggestion that there should be extreme limitation to the amounts of insurance issued non-medically and containing disability and annuity benefits. Even upon business carefully examined, the Waiver of Premiums may be a legitimate addition in amounts not to exceed $50,000, but I am of the firm opinion that the annuity privilege never was a proper part and should not now be a part of a life insurance contract. In the light of the almost universal unfavorable experience, it is amazing that life insurance companies continue the practice of granting the annuity benefits. I have continually hoped that I might some day have the honor of being a member of a body of medical men which would have the courage to frankly express by proper resolution their profound conviction of the error of this proceeding. To continue to extend this privilege upon the non-medical plan would certainly seem to invite increasing disaster, unless the amount is rigidly limited and unless it be denied when it can possibly be determined that the applicant carries other non-medical insurance bearing this provision.

Indeed, we would go further and state that our only apprehension about the writing of non-medical insurance would lie in the fact that in our greed for business and in the ardency of our desire to prove ourselves experimental and progressive, we may be led to race competitively toward the granting of larger and larger amounts until the danger point is reached and soon passed. Should that prove to be the case, and against this an earnest warning is uttered, we would not

be steering between Scylla and Charybidis, we would be heading straight for the rocks of disaster.

Dr. Whitney—Dr. Archibald, will you kindly continue the discussion?

Dr. Archibald—Mr. President and Gentlemen: I notice that the other members who have discussed this paper began by making excuses and apologies. It is indeed difficult to attempt to discuss or criticize any experiment, and I feel that perhaps of all the members of the association, I am one of the worst who could have been chosen to discuss this subject, because I am unqualifiedly and unequivocally opposed to life insurance without medical examination.

My own Company adopted this practice a little more than a year ago, and we were one of the last Canadian Companies to join the fold, or rather to be driven into the fold with the collie "Competition" snarling at our heels.

Dr. Scadding and Mr. Smith have explained to you in their paper the reason why Canadian Companies adopted this practice, and you will all understand that on account of the large number of our medical men who went Overseas during the War, and who did not return to their original practices when the War was over, that the field medical department of the Canadian Companies became greatly disorganized.

I must congratulate the authors of this paper on the Caption they have chosen. You will notice that it is not "Non-medical Insurance" but "Life Insurance Without Medical Examination." This practice, which the Canadian Companies adopted had a certain precedent in the action of some of the English Companies, one of which at the present time is accepting an amount up to fifteen thousand pounds (£15,000) on a single life without medical examination. This statement is however, not absolutely correct, as the English Companies demand in most instances a written report of the applicant's past health and physical condition from his own physician, for which they pay one guinea, and I should like

to ask you, granting that the physician in question is at all honest, whether such a report is not worth in many instances even more than the information obtained from casual medical examination in the selection of our risks. It is in reality supermedical examination.

Dr. Scadding has pointed out that in the practice outlined by his paper, the Company received the information concerning the applicant's family history, his build and appearance, and his previous medical history; added to which is of course, also, the data furnished by the Retail Credit Report; and that the only information lacking is the physical examination of the applicant at the time he applies. Is this not Hamlet with Hamlet left out? It must be remembered also that the information received, is given by the applicant, a layman, who is interested in obtaining a policy; to the agent, another layman, who is also interested in the applicant obtaining a policy; and I cannot agree with Dr. Scadding and Mr. Smith judging by the general results which we have obtained so far, that the answers thus received are as truthful, or more truthful, than those given where a medical examination of the applicant is also required. It would appear of course, from the figures which they have given us that insurance without medical examination can be carried on profitably, that is to say, the Companies can receive sufficient protection to insure a low mortality.

There is to my mind, however, a still more important principle which is being entirely overlooked. This Association in co-operation with the Actuarial Society has spent an enormous amount of time, money and thought in trying to perfect the science of the selection of life insurance risks. No one will deny that great progress has been made, and that the credit for this progress is very largely due to the information obtained by the medical examination of applicants who apply, associated with the study of mortality tables. We are now told that this investigation has, so to speak, almost

reached finality, and that further investigations can be limited. If as Dr. Scadding and Mr. Smith tells us, sixty-seven per cent (67%) of the applicants of some of these companies during the past year have been accepted without medical examination, are we not in the future if such methods are followed, losing an enormous amount of valuable data?

I feel personally, that this must be so, and that far from giving up medical examination we should, where possible, make it more exacting than at the present time, and I believe that this method of underwriting is a retrograde step in the scientific selection of lives for Life Insurance.

Dr. Whitney—Gentlemen, the subject is open for discussion; are there any further remarks? Dr. McCulloch.

Dr. McCulloch—Mr. Chairman, we have heard this subject discussed very intelligently from several angles and a good many of us know something about it or are expected to know something about it. We hope our experience will not be one to regret after the passing of years, but there is another angle to the situation that I would just like to mention while we are thinking about this matter, and it is neither actuarial nor mathematical nor is it medical but it is social. All kinds of social propaganda sweep across the country from time to time, particularly as the aftermath of the great cataclysms like the World War. A great many wise or unwise things are composed for the benefit of humanity generally, and we see some very practical and definite and concrete examples of that thing. We have seen the Soldier's Compensation Act enacted for the benefit of the ex-service men. We have seen enacted in many states Workmen's Compensation Acts. There are a good many organizations country-wide in their ramifications. The Elks, for instance, occur to me at this moment, are advocating old age pensions. Now if some are anticipating what might very easily come about, compulsory insurance for old age, might not that lead to compulsory insurance in general? Can not we do something for the large body of people who

by virtue of inconvenience, or whatever you like, ordinarily do not have the advantages of insurance laid before them, make insurance practical to acquire. I think that it is not unreasonable to believe that it may be the means of heading off unwise and socialistic legislation that in the long run would work to the disadvantage of the insurance companies, and to my way of thinking this might properly be considered insurance on our own part against unfortunate situations or affairs that might eventually arise.

Dr. Whitney—Is there anything further in this discussion?

Dr. Jenney—I would like to be made acquainted with the subject touched upon, the effect of non-medical on the examiner in the field in relation to business we will have to have examined.

Dr. Hamilton—There are two points I would like to speak on. The first is this, that this matter was an experiment, which may be regarded as purely a financial one. When the matter was first brought to our attention in Montreal, the medical end of the administration would have nothing to do with it, and, I may say, are very strongly opposed to it. We are in no wise responsible for what our Directors may choose to do. If the income is sufficient and they are paying a dividend, I think we can stand quite apart from it.

In the second place, so far as compensation is concerned, we had a representation a few days ago at our head office and they said that the men who had been working for a long time, some of them getting $200 to $300 and $400 a month in our work, have now been reduced to $30 and $40 per month.

The third matter that occurred to me, in analyzing the statistics, 35 per cent at least of those claims would never have become claims if they had been examined by an ordinary physician in the field. However, the matter which the Directors have in their hands depends upon the dividends and the

investment of the company's money, but I think that the medical men are opposed to it.

Dr. Hobbs—May I ask this question: Is there any question as to what a mutual company that examined membership will think of a procedure of this kind? Will they have any objection to members being brought into the company without examination?

Dr. Whitney—Dr. Scadding, have you anything to add?

Dr. Scadding—I am sorry I cannot answer Dr. Hobbs' question. With reference to inspections, I may say that we inspect all cases. This would appear to be one of the main safeguards.

We have only discovered a single case where the weight was fraudulently and grossly misrepresented. A great many laymen seem to be able to estimate the body weight as closely as doctors can. I have been rather astounded at the large amounts of insurance which are written in this country upon estimated weights, weights approaching either extreme of the Table, in the medically examined cases. Some of us seem to be less nervous about this than others.

I have been misunderstood if I have given the impression that I am in favor of increasing the amounts beyond a very moderate figure. The Canada Life has recently increased its limit from $2,500 to $5,000, but we have limited the amount of the Total Disability feature. I feel, and we have tried to indicate in the "paper," that there is considerable danger in adding a non-cancellable sickness benefit on the non-medical plan in amounts exceeding $2,500. While it is true that in the Old Country, where this method of underwriting has been followed for some twenty-five years, they have removed restrictions from time to time, they have moved slowly and with great caution. Now we proceed to remove restrictions in about as many months as they do in the same number of years.

I would commend to your notice a very excellent contribu-

tion to the subject of Life Insurance Without Medical Examination by Mr. John Nichol in 1904, recorded in the Transactions of the Faculties of Actuaries in Scotland. Reference is therein made to a pamphlet issued in 1851 on medical combinations against life insurance companies. After the War, we were faced in certain localities by very similar action on the part of our medical examiners, and many applications were written in parts of the country where a medical examiner's services could not be had. I think it was chiefly such barriers, raised by the medical men themselves, and other difficulties attendant upon medical examination, which drove us to institute non-medical business.

On the reverse side of the non-medical forms before you, it will be seen that the Company, which I represent, requires the agent to proceed to medical examination under a fair number of circumstances. Whether we are over-cautious in so doing, remains to be seen.

A pretty complete list of the British offices writing non-medical insurance, and their practices, is given in the "Eastern Underwriter" of August 14, 1925. When the applications are for a much larger amount than £400, it is quite common practice to obtain a very full report from the applicant's medical attendant, who is paid a fee equal to that for medical examination.

Summing up the whole matter, the safety of the business, I am persuaded, depends upon the following considerations:

1. Common honesty of the community.
2. Thrift underlying the contract.
   (a) No Business insurance.
   (b) No Term insurance.
   (c) No third party insurance.
3. Dependability of the agent.
4. Thorough inspection.
5. Limitation of applications to small amounts.

It is all very fine to say that, because in England and Scot-

land for over a period of twenty-five years they have employed this method of underwriting with gratifying results, we in Canada and you in the United States can do likewise. In the matter of common honesty of the community, I feel that we in Canada are very far removed from those in Great Britain. I may say, in passing, too, by way of comparison, that by race their people are, to a large extent, homogeneous, whereas there is considerable admixture of races in this country. They possess certain admirable traditions, fostered by education, secular and religious, which we may lack. They have such a sport as cricket, which instils into the minds of the young and old the spirit of fair play and common honesty. I doubt if we possess these national characteristics to anything like the same degree. I leave it to you, gentlemen of the United States, to say how much better or worse in this respect you are than we.

Dr. Whitney—I am going to ask you to bear with us a few minutes longer. We have but one more paper to discuss and I will ask Dr. Dingman to present a few facts about his paper on Disability Insurance.

Dr. Dingman—Mr. President and Gentlemen: You do me honor by allowing me the floor in this convention of the Life Insurance Medical Directors. When our President wrote me, it was not an invitation that he extended, although he expressed it that way in his characteristically happy manner, it was a command.

I am not unaware that my province is merely to lay a basis for discussion and your part is to elucidate. Not so many years ago I had a score or more of appointments in Detroit and I have asked not once but several times, "What kind of a chap is so and so," the Medical Director of this or that company. And when the wheels of chance put me with similar duties, I began to delve into the literature and I have asked not once but several times, "What kind of person was Dr. Biernacki?" He read the first paper before this As-

sociation, I believe. And I have wondered about Dr. McKnight and Dr. Marsh and Dr. Shepherd and Dr. Symonds. They never knew me and they didn't miss a thing. But I have. And yet I have had all sorts of good because they lived and have allowed me to benefit by what they did. Their work lives on. Today we have the stimulus of men like Dr. Dwight, Dr. Rogers, Dr. Patton, Dr. Toulmin, Dr. Knight, Dr. Scadding, Dr. Beckett, Dr. Muhlberg. I wish I could name each one of you. I surely bespeak the feeling of the younger men, I mean by that the newer men of this Association, when I say that what you have done in the past, and more than that, what you are doing today in allowing us to feel we have your co-operation, has been of the greatest value to us.

And now the subject you assigned me, disability protection. The paper that I wrote is altogether too long for me to read, and as I stand here, I am puzzling my mind to suggest a reason why you should read it. None occurs to me at this moment. We can't call disability protection something new; it is not, it's old. When the first group of men gathered together and offered aid of one kind or another, it was aid for economic distress. No distress, no aid. It didn't matter a great deal whether the man was bed confined or earth confined; if there was economic distress, it called for relief.

We find many a parallelism between disability protection and life insurance. Life insurance had its scientific beginning in 1762. At that time James Dodson and Thomas Simpson and Dr. Richard Price were working together to learn an adequate basis for rates for life insurance at different ages, and in that same general time period, that same Dr. Richard Price was designing a table for disability. It was a hypothesis and we have been hypothecating pretty well ever since then.

A century ago, life insurance had the greatest stimulus it ever had. In 1824 more companies were founded than any

year before or since. It was in that very same year that there came out the first disability table, the experience of 79 Scottish societies. Other societies based their rates on that experience and suffered. They found they could not hold their claims as low as the Scotch did. And in the hundred years since that time, each large experience has shown a greater morbidity than there had been before. Sir Alfred Watson commented on it; Mr. Craig spoke of it; we could name many others.

Now theoretically, if we were to calculate rates for disability insurance on the latest of late experiences, so late that it hasn't been published yet, we should find that the problem is not answered. Why? Because as we increase the premiums, we shake out the honest folks who want honest insurance, but won't pay high money, and keep those who expect to get their money back in any event and don't worry what they pay. Illustration: theft insurance on automobiles. Raise the rates and who cares the least? The man who really plans the claim before he buys? Or the honest man? Similarly with disability insurance. I am told there are brokers in this town and in other towns who sell health and accident coverage with the guarantee of the return of the money in claims. This brings to mind the great difference between life insurance and disability insurance. Regarding the ordinary life policyholder, we may fairly say that he is willing not to collect. It may not be going too far to say that he is anxious to defer his death claim. But with the disability policy he is not only willing to collect, sometimes he seems a little over-willing. Some one was telling me here yesterday that he investigated disability claims on $130,000 of life insurance and he accepted $50,000 as bona fide. There were claims on $80,000 that were unacceptable. I shan't tell you who it was who told me that, but I hope Dr. Martelle will rise in the discussion afterwards.

The greatest thing that ever happened in the health and accident business was when the life insurance world began to

turn their brains on it. One wonders if the same contract provisions can be made applicable. A couple of years ago, we issued $10,000 with 2 per cent benefits to a man who now has his claim in for tuberculosis. He waited the incontestable period of one year. We have black and white evidence that he knew he had tuberculosis when he applied. It almost condones fraud if we allow the incontestable period clause to apply to disability as it does to life. We wonder if prorating is not as necessary with disability benefits as it is with the separate contracts that the casualty companies issue. A man earns $12,000 today; in 1930, he earns $10,000; in 1935, he earns $6,000. We have seen illustrations of that since the War, how incomes came down. If a man buys disability indemnity when his income is at the peak, it is an invitation to fraudulent claims when he can collect more in claim-papers than in pay checks.

Moreover, there is some sales advantage in the separate contracts of life and disability. Reflect a moment, each of you, the difference in your economic and your domestic status now as compared to ten years ago. Reflect a moment on what may happen ten years from now. It is more than possible that the beneficiary that you are so anxious to protect today may not need your protection ten years from now. It may be that you may want to cash in on your own life insurance and be your own beneficiary. But you may not wish to drop the disability protection which you have.

Now, gentlemen, I am not advocating separate contracts. But as we discuss the subject of disability underwriting and disability claims, we must hold in mind what answer to the problem is available, and contrary to the belief of many, the adjusting of rates does not answer. I have a Hibernian hope that these thoughts may strike fire or draw fire.

And now, gentlemen, that you have accorded me this privilege, that I deeply cherish, of laying a basis for discussion, I sit me down to listen and to learn.

DISABILITY INSURANCE: Moral Hazard

By Dr. H. W. Dingman

Medical Director of the Continental Assurance Co.

1. Historical

In days of guilds, in days of old, groups banded together to share among the many the outstanding losses of the few. These losses prompted relief only if they caused poverty. It was not sufficient that one suffered from theft or shipwreck or fire or disability. Help was proffered only if the misfortune caused actual economic distress. So in the very beginnings of disability protection, we see a subconscious understanding of moral hazard and the counteracting of that hazard by strict definition that it must be a poverty degree of loss to occasion relief.

Similarly today, the insurance definition of disability is more restricted than the medical. Indemnity is payable only if the disability causes incapacity from work. It must be of such a degree as to impair one's ability to earn a living. Wherefore disability insurance is protection against earning power becoming impaired by disablement. It is the complement of life insurance which is protection against earning power being destroyed by death. And since earning power can be weakened or lost by a third peril, old age, income protection is incomplete that does not forestall three hazards: disability, old age, death.

Fraternal organizations were first to attempt systematic protection for disability. Starting in the wee ages of humanity the convivial and gregarious natures of mankind drew men together in thiases in Greece, in collegii in Rome, and then their sympathetic and altruistic natures prompted them to give contributions to aid disabled brother members. These organizations were the forerunners of guilds, which preceded friendly societies and lodges.

The early guilds were both social and philanthropic. As

Cornelius Walford[1] put it, "Though one guild may have set itself one special object, and another a different one, yet, running throughout the whole, there are to be found the same general characteristics of brotherly aid and social charity." Oath was taken for faithful brotherhood toward each other and support in case of sickness and death, Dr. Lujo Bretano[2] has told us, but the object of the early guild went further than relief for personal misfortunes, to alleviate also economic distress from property loss.

It became too general a protection to try to relieve suffering from both property and personal losses. Gradually, assistance was restricted to distress consequent upon death and disability. Voluntary contributions gave way to assessments that all might contribute equally. Then came the desire to know what assessments might be expected, and that in turn required knowledge of what disabilities might be anticipated. It was 1771 before attempt was made to predict futures in disability and it was that excellent scholar, Dr. Richard Price[3], to whom insurance is so much indebted, who first suggested a systematic basis.

These thoughts on disability likelihood crystallized into tentative tables in 1789, though it does not appear what data, if any, served as a basis. His nephew, William Morgan[4], published these tables of disability pay and old age pay which "were computed by Dr. Price at the request of a committee of the House of Commons, and were intended to form the foundation of a plan for enabling the labouring poor to provide support for themselves in sickness and old age, by small weekly savings from their wages."

Briefly, it was Dr. Price's supposition that:

—under age 32, 1 in 48.0 would be sick: sickness-rate	1.083 weeks
—at age 33-42, 1 in 38.4	1.351
—at age 43-51, 1 in 32.0	1.624
—at age 52-58, 1 in 27.4	1.895
—at age 59-64, 1 in 24.0	2.166

William Morgan and William Frend[5] carried this hypothesis further for the Southwell Friendly Society and their

table published in 1823 was called the Southwell Table of Sickness.

Politics is politics, whether one century or another and whether one country or another. It operated in 1819 when the Friendly Societies[6] proved themselves strong enough to nullify a clause in an English act that would have provided for governmental actuarial supervision of Friendly Societies.

In 1820 Charles Oliphant originated a scheme to offer prizes for returns from Friendly Societies in Scotland. Data received from 79 societies afforded an experience of 104,000 years of life between ages 20 and 70, the experience dating back to 1751. Thus was made possible in 1824 the Highland Society Table[7], the first actual experience tabulation. But this table understated disability likelihood, because the Highland Societies still clung to the old guild idea that a member should not claim sick pay unless absolutely he needed it.

When John Finlaison[8] included in his report to the House of Commons an investigation of sickness in a London society for six years, the preface that he gave to one of his tables showed that he recognized the complementary relationship of sick-pay and old-age-pension and death-benefits:

"Let an allowance of 10s a week in sickness continue till the age of 65; a pension for life unconditionally afterwards of 1s a day; and £15 payable at death, be the benefits proposed by any society. Let the conditions further be, that all contributions to be exacted from the members shall cease at age 65. The following table shows the value thereof assuming always that the funds of the society can be improved by interest at the rate of 4 per cent; and that the expense of management is to be made good by some other assessment."

It illustrated the need of the times when Charles Ansell[9], author of a sickness table based on 24,323 years of exposure in the Society for the Diffusion of Useful Knowledge, could be quoted by Alfred Burt[10] that 2,000 Friendly Societies had

reported to him as insolvent in a three year period. The causes were three-fold:

1. Flat rates regardless of age.

2. Use of public houses for meetings. ("It is thought that not fewer than 1,000,000 persons in this kingdom are members of Friendly Societies; and probably each person does not, on an average, spend less than 5 shillings per annum at the monthly meetings and yearly feasts. The annual expenditure for what is in many cases a worse than useless purpose will therefore not fall short of £250,000"!)

3. Inadequate knowledge of what disabilities to expect.

It was a very critical analysis of comprehensive data that F. G. P. Neison[11] gave in 1845 allowing disability rates to be deduced from an experience of some 200,000 members in English and Scotch societies. He was first to demonstrate the favorable influence of rural residence and the unfavorable influence of strenuous occupations.

Such was the experience available when United States Companies were making pioneer attempts in 1845-50 to write health insurance as a commercial proposition. "The first provision for insurance against loss from incapacity attending ill health was the Massachusetts Health Insurance Company of Boston, an institution of character, with its operations based upon recognized elements of possibly correct procedure." Contracts were written for $4.00 weekly benefit during incapacity from sickness, wrote J. A. Fowler,[12] for premiums varying from $4.50 yearly at age 20 to $9.00 yearly at age 50, if one year contracts, $5.62 to $11.25, if five year contracts. This company wrote 1,400 policies in the last half year of 1847.

It tells us why they discontinued business when we read in the "Insurance Monitor"[13] that Dr. Lyman[14] of the Massachusetts Health Insurance Company, reported that "188 of 761, or 26.70 per cent of the members were sick; and the length of such time was 31 days to each."

The Eagle Life and Health Insurance Company of Jersey City incorporated in 1847 and when that romantic soldier of good and bad fortune, Harvey G. Tuckett, took the Philadelphia agency in 1850 it was at the opulent salary of $100 monthly. But Captain Tuckett's contract had to be cancelled because his business was so far short of the expectations.

The Health Insurance Company of Philadelphia formed in 1848 with a capital of $100,000, and wrote 1,126 policies by January of the next year. It was 1849 that saw the Spring Garden Health Insurance Company organized in Philadelphia, afterwards to become the North American Mutual Life and Health Insurance Company, who had about 200 policies in 1852 when transferred to the Aetna of Hartford.

The American Life and Health Insurance Company started in 1850 with power to write both health and life insurance. They originated the plan of elimination period in sickness contracts. They did not pay for the first week of sickness. Even so disability coverage could not be made practicable and the company lasted but a brief couple years. It was 1850, also, that the Hartford Life and Health Insurance Company became chartered. It had a brief existence.

The Life and Health Insurance Company of Philadelphia had been started, as J. A. Fowler[15] has recounted for us "and while life insurance, as such, was excluded from the charter of the company, it had added a burial fund of from $20 to $50, to be paid at death, in addition to the weekly benefits during sickness; and before a year had elapsed life insurance was decided upon as a department of the company's business, power to insure lives being afterwards attained by Section 4 of a miscellaneous legislative act approved April 4, 1849." When this company merged into the Philadelphia Life, health insurance was discontinued. Association of life insurance and disability protection as complementary coverage finds expression variously in the history of insurance.

The rates adopted by these different American companies

were a modification of the various English fraternal tables, and while it was a disgruntled Harvey G. Tuckett[16] who wrote in 1852 that rate-making was done by taking another company's premium scale and "deducting ten, fifteen or twenty per cent, as fancy dictated or the greater number of policies could be obtained," we must concede that it was lack of knowledge of what disabilities might be expected that prompted arbitrary adjusting or fixing of rates. If claims could be predicted with reasonable accuracy, as in life insurance, it would be comparatively simple to determine what premiums to charge.

It is apropos at this juncture to quote Henry Tompkins[17] because his remarks of 71 years ago are as applicable today as then: "It is far more difficult to obtain facts relating to sickness than to death—because, in the first place, death has one common meaning among all classes; but it not so with the word 'sickness.' Also sickness may be, and often is, feigned; but it is not so with mortality. A death also occurs but once to an individual; but sickness attacks an individual at various periods of his life, and at each time with a different degree of intensity and duration."

During the next fifty years what health insurance was written in America was fraternal. Most important of these was a German society, the Hildise Bund, whose death and sick fund obligations were assumed by the Metropolitan Life in 1879, and the Prudential Friendly Society, afterwards the Prudential Life Insurance Company, which discontinued its sickness branch in 1875 because, as F. L. Hoffman[18] stated, it was "absolutely impossible to guard against sham sickness, imposition and fraud in other directions, and all calculations on no matter how accurate a basis, will prove inadequate in practice." We have it on the statement of H. J. Messenger[19] that the Fidelity and Casualty, in 1898, was first to issue a health policy, which, though limited as it was in what diseases it would cover, was the forerunner of the disability protection

offered today. The Aetna and Travelers followed suit within a year, March, 1899.

Accident insurance began in the same era that saw health insurance so vainly struggling. Cornelius Walford[20] has told us how the advent of steam railways brought about the need of travel accident protection. Some fourteen companies were projected in England during 1845-50 but only three wrote actual business.

In 1850 the American Life and Health and the Keystone Mutual of Harrisburg, Pa., attempted accident insurance in the United States. The Franklin Health Assurance Company of Massachusetts organized in the same year and Walter C. Faxon[21] has quoted H. P. Dunham for his authority in saying they wrote travel accident policies in 1850.

Harvey G. Tuckett[22] urged the desirability of accident insurance and cited the English experience. By 1860 there were at least five companies with approved charters: The North American Transit Insurance Company, the U. S. Travellers' Insurance Company, the Philadelphia Accidental Insurance Company, the Commercial Guarantee Company and the Aetna. The Travelers of Hartford incorporated in 1863, and are generally regarded as the pioneers in the United States.

Both health and accident insurance started between 1845 and 1850 as distinct phases of personal protection. Accident insurance established itself and has been written uninterruptedly since then. But health insurance could not then survive. Moral hazard, then as now, was the great obstacle. Injuries being objective in most instances give demonstrable evidence of their actuality and moral hazard is a lesser factor than in health insurance with its many indefinite and feigned claims. Sickness claims were too many, in 1850, and resistance of unfair claimants too inadequate. Indeed, 75 years later, unfair claims still are too many and resistance too weak. Loss ratios in casualty companies are persistently higher with health coverage than with accident protection.

The years following 1850, as also the years before, have shown us still dependent on the fraternals for insurance experience of disabilities, particularly so in those disablements involving invalidity. To their everlasting credit the fraternals have assumed their responsibilities magnanimously.

Fairly enough it might be asked why friendly societies could provide disability coverage if commercial companies could not. And again we say moral hazard. Incentive to collect is less because indemnities average smaller. Indisputably also, sick-pay has depended almost as much on the condition of the treasury as on the nature of the claims. The fraternal spirit is emphasized and fellow-members call upon their sick, making what amounts to informal but very personal investigations. Contrast a commercial company whose policyholders are unknown to each other. The larger a lodge is the more impersonal it becomes, the more mercenary and the less fraternal. A. W. Watson[23] illustrated this point well when he considered cost of sickness, according to membership of 3,581 Manchester Unity lodges that he analyzed:

Cost exceeded normal in	if membership was under
41%	80
51%	80-149
57%	150-249
66%	250-349
74%	350-499
82%	over 499

We now enumerate briefly and chronologically some important studies on disability-likelihood since 1850.

The lodges of the Manchester Unity of the Independent Order of Odd Fellows made a brief survey of their 1844 experience and were later prompted by the indefatigable efforts of Henry Ratcliffe[24] [25] [26] to make valuable investigations of their 1846-48, 1856-60 and 1866-70 experiences. Hardly, less important were the analytical reports of A. G. Finlaison[27] [28] in English Friendly Societies during 1846-50. One comment

of Mr. Finlaison's drew attention to that greatest of all questions in health insurance, what constitutes disability? "* * * the tables now supplied for allowances in sickness are applicable to nothing but sickness in the strictest sense of the term. They are not intended to meet the case of chronic infirmity demanding little or no medical attention. It is, in fact, the weight of this exceptionable description of claim that generally breaks the back of a Friendly Society; for too little discrimination by far is often used in distinguishing real sickness from the so-called, that is often merely an incapacity for labor."

William Sutton[29] studied permanent disability likelihood in his "Blue Book" analysis of the English registered societies of 1856-80. It was about the same period that a younger F. G. P. Neison[30] [31] was studying the English Foresters' data. In 1894, R. P. Hardy[32] published the "Hearts of Oak" experience. Meanwhile, the Germans (*inter alia* 33, 34, 35, 36, 37, 38, 39, 40) were developing special studies of permanent disabilities in industrial life as based on railway employees and miners and other workmen. In 1891, T. E. Young[41] made a valuable review of the German endeavor to insure against invalidity, exhaustive in every respect except bibliography. About 1900 came A. W. Watson's[23] [42] [43] masterly analysis of the Manchester Unity data of 1893-97. This survey has received considerable recognition and study because of its size (over 7 million weeks of sickness with 39 thousand deaths in 3 million years of exposure), and because the data was classified to indicate what sickness there was in the first three months, the second three months, the second six months, the second year, and thereafter.

Sickness rates as determined by various of these experiences were shown comparatively by George F. Hardy[44] to whose table is added the later and larger M. U. experience of 1893-97.

SICKNESS RATES IN WEEKS, PER MEMBER PER ANNUM

Ages	Highland Society 1751-1820	Ansell, 1823-27	Neison, 1836-40	Finlaison, 1846-50	Manchester Unity 1846-48	Manchester Unity 1856-60	Manchester Unity 1866-70	A. O. F. 1871-75	M. U. 1893-97	Ages
20-24	.58	.78	.86	.98	.68	.83	.75	.82	.90	20-24
25-29	.60	.82	.89	.98	.76	.82	.81	.85	.95	25-29
30-34	.64	.89	.92	.97	.84	.86	.93	.97	1.06	30-34
35-39	.70	1.01	1.04	1.09	.94	1.00	1.06	1.15	1.27	35-39
40-44	.81	1.19	1.27	1.23	1.18	1.24	1.26	1.37	1.58	40-44
45-49	1.11	1.47	1.63	1.44	1.51	1.55	1.64	1.71	1.99	45-49
50-54	1.54	1.89	2.18	1.73	2.03	2.01	2.22	2.27	2.75	50-54
55-59	2.02	2.59	3.05	2.18	3.21	3.02	3.05	3.21	4.02	55-59
60-64	2.74	3.99	4.74	3.12	5.06	4.64	4.72	4.59	6.31	60-64
65-69	6.60	7.47	10.01	4.62	6.50	7.16	7.24	7.97	10.59	65-69
70-74	—	—	16.53	7.67	12.15	12.06	12.06	12.00	17.40	70-74
75-79	—	—	25.06	11.06	16.72	16.64	16.87	17.66	25.15	75-79

2. Modern American.

It was 1908 before C. W. Jackson[45] precipitated American discussion by his paper based on the English and German data. Then followed Sidney H. Pipe[46] with the Canadian Foresters' experience. He found that 467 invalidities averaged about 17 months in length:

Tuberculosis claims	(23.4%)	averaged 9 months,	15 days
Paralysis	12.7	28	12
Insanity	12.0	7	27
Circulatory ailments	7.2	20	0
Urinary ailments	5.2	16	25
Cancer	4.7	5	15
Injury	4.4	23	13
Varia	30.1	25	6
467 invalidities:	100.0	16	28

Franklin B. Mead[47] brought out his scholarly paper on "Total and Permanent Disability," in 1910, using the Maccabees experience of 2,927 cases of invalidity. Arthur Hunter's[48] well-known study followed in 1911, and from available fraternal data he deduced the Hunter Table that has received so general recognition. Miles M. Dawson[49] analyzed two trade experiences and drew an American Sickness Table from the "Workmen's Sick and Death Benefit Fund" as published by Dr. Boris Emmet[50]. Non-cancellable health and accident insurance became an actuality in 1915, and at once the problem was what disabilities to expect, what rates to charge. A special committee studied the problem and agreed to present dissenting reports. There is a fund of information in the essays of E. E. Cammack[51] and J. M. Laird[52] and the frank discussions that ensued at that meeting.

The literature of the last decade is well known to students of disability and needs no mention at this time. Suffice it for present purposes to make but one or two more references.

It showed clearly the moral hazard element in disability insurance when the Committee of Five[53], B. D. Flynn, chairman, analyzed the 1921 commercial health and accident experience of 16 large companies to learn that

—loss ratios were	40%	with indemnities under $15.00 weekly
—	53%	15.00- 24.99
—	57%	25.00- 49.99
—	78%	50.00- 99.99
—	94%	100.00- and over.

The average was 64%, total earned premiums being $5,837,967.00, and 50% is the usual provision for losses under most commercial health policies.

Perhaps no added comment is necessary that the larger the indemnities, the higher the loss ratio in spite of special underwriting care that the larger applications receive. But it is so frequent that an agent presents as particularly desirable the case of a wealthy applicant "because he wouldn't bother to present small claims as would a man with a small income" that it is well to have in mind actual experience, as just cited, which tends to prove that it is only the well-to-do individual who can afford to get well leisurely. The poor man remembers his job.

And when he has no job, he remembers his disability policy. Such is the logical conclusion to be drawn from J. R. Leal's report for 1923 as chairman of the Southern Industrial Insurers Conference. He presented a graph to show that the claim curve goes down when the trend of business is upward. But when there is business depression and unemployment, disability claims become heavier. "We are almost forced to the conclusion that accident and health companies have more to fear from a panic or business depression, than they have from an epidemic of influenza, dengue fever or smallpox. If our old friend, Diogenes, is searching among our policyholders or the doctors who fill out claim blanks, his light will continue to burn. The problem of fake claims remains unsolved."

We review the studies of a century and a half since Dr. Richard Price advanced his "Hypothesis of Disability-likelihood" and it becomes forced upon us that we do not yet know how to anticipate the claims that come to us. It has received mention by J. D. Craig[54] [55] and others that each published experience has shown a higher morbidity incidence than those

given before. Sir Alfred Watson[23] observed this when he reviewed the 1893-97 Manchester Unity experience comparatively with previous important surveys, and commented that "sickness rates are constantly rising whilst mortality rates, except at the later ages, are declining * * * Not only is the sickness per member, at each period of life heavier than was formerly the case, but a greater proportion of members than formerly now survive into old age, the period of life at which sickness is at its maximum intensity."

Sickness rates have shown an undoubted tendency to increase in the last century. If the same factors that have been responsible to cause that increase, are continuing to operate, there will be a constantly growing morbidity rate in the present century. All of which is important to understand because it means that past experience is an inadequate basis on which to nominate present rates for future disabilities.

Can we designate what these factors are? Possibly. Some pertain to the applicants themselves. Some apply to the companies and other agencies that offer disability protection.

1. We are fond to believe we live in a civilized era. We demand more of life and we subscribe to higher standards of health. A lesser variation from the norm receives our admission we are sick. Consequently, there is more sickness than formerly because we have increased our idea of what constitutes sickness to include what we used to regard trivial. We demand more in health, and an agency that protects the health of the individual is expected to supply more.

2. We have established infant welfare propaganda, we have built hospitals for the mentally and physically sick, we have organized clinics, we have inaugerated publicity movements, all to counteract Nature's Law of Survival of the Fittest. Consequently, the adult age receives many candidates from the infirm and the weak that had been predestined to early graves. Society nurtures those who are frail in body

and in mind and their disabilities become our responsibility, and their progeny.

3. We have fought many plagues that used to kill adults and many individuals who formerly died of cholera and smallpox and yellow fever and tuberculosis now live into the sunset of life to develop disabling senility, or senile disabilities.

4. In short, there are reasons why bona fide disability claims are becoming more and more frequent. It is likewise true that unfair claims are increasing alarmingly. Methinks it is not mere coincidence, the many hernias that are repaired, the many appendices that are removed, shortly after health and accident policies are obtained. And many and many are the travel vacations that are taken under guise of nervous breakdown. There would seem to be an increasing understanding of exactly what nature health contracts are and how they may be used, if not abused. Many are the brokers, if not the agents, who are willing to give thorough courses of instruction to those who will buy from them. Is it not an illustration when the Committee of Five[53] found that the largely urban business in New York and Illinois of 16 large casualty companies showed a consistently higher loss-ratio than that of the Southern states, 65 per cent higher when indemnities were $50.00 weekly or greater? This, in spite of the greater morbidity that might be expected in our Southern states.

5. It is company responsibility that we offer more and more in the way of protection, and that desirability can hardly be subject to censure, unless we are negligent in the proper analysis of claims that are presented. It is harmful to the business if claims are paid with so-called liberality simply because a company is not organized to sift the real from the sham and thus deal justly. Fake claims delayed the progress of health insurance a full half century and we hinder the progress further if we think that payment of claims and payment

for disabilities mean the same thing. Unfortunately, they do not.

It was a splendid idea for a life insurance contract to ensure itself, as it were, by providing for waiver of premium in the event of invalidity. The Knickerbocker Life Insurance Company[56] had adopted the idea in the 50's with a "Benefit Fund provided for the relief of distressed policyholders who have paid five annual premiums. After this, any one of the misfortunes enumerated above will entitle such policyholder to the benefits arising from this fund, and the company are bound to advance the premium money and continue the policy." The problem with waiver of premium is to determine how likely is real invalidity. Sir Alfred Watson[57] has said "Looking again at the experience of any typical Friendly Society, they would find that, taking the whole mass of the insured, something like one in seventy-two were in receipt of permanent sickness benefit." Bruce D. Mudgett[58] used F. B. Mead's[47] Table of Probability of Invalidity at each age to deduce what likelihood there is of permanent disability occurring in one's lifetime:

about 1 in 22	in a lifetime, at age	20 (.0460)
1 in 16		25 (.0604)
1 in 12		30 (.0803)
1 in 10		35 (.1080)
1 in 7		40 (.1466)
1 in 5		45 (.1977)
1 in 4		50 (.2652)
1 in 3		55 (.3573)
1 in 2		60 (.4758)
2 in 3		65 (.6134)
3 in 4		70 (.7477)

It embraced actual disability protection when, in addition to premium-waiver life insurance contracts provided for monthly payments when and if permanently disabled. Based on actual invalidities as it is, Arthur Hunter's[48] Table served as a reliable basis.

There have been very practical reasons for extending this supplementary coverage of life insurance contracts so that a

broader protection is given in the event of long disabilities. Competition is one. A liberal disability clause is a business getter. It meets the need of the buyer who recognizes that his income may be lost to his family by disabling even as by death. Claim-handling is another reason. Who can determine a disability as permanent in advance of proof by death? Who can judge what recuperative power the marvelous human body can display? If, then, the company requires proof that a disability is total and permanent, and if it is true in many instances that invalidity can be proved only by death, there will be many, many policyholders who will never receive the aid they need, though their beneficiaries may. It is both practical and beneficent to state a definition in the contract of what will be conceded to be a claim for permanent disability. Many American companies are now stating arbitrarily that 90 days will be considered as proving, for contract purposes, that a disability is permanent. A few companies name 60 days, or even 30.

It becomes obvious that claims will be much more frequent for these so-called permanent disabilities than for actual invalidities and rates that are ample for real invalidities may be inadequate for contractual permanent disabilities. This fact becomes more apparent to us when we remember that our generally accepted standard, Hunter's Table, was based in large part on data of American fraternal members who established the permanent nature of their disabilities by being incapacitated six months before they were eligible to prove that they would not get well.

So as we underwrite disability benefits, we must bear in mind that our standards of probability are predicated on actual invalidities, but that the disability coverage we offer nowadays is so amplified as to allow many temporary disabilities and to encourage many questionable claims. Mr. Hunter allowed two factors of safety as he deduced his table, but these factors have been more than nullified by two elements of

hazard that our augmented benefits have occasioned, the temporary disabilities and the sham claims.

Someone spake an epigram when he said that to collect life insurance one dies, to collect accident indemnities one gets hurt, to collect sick-pay one buys a policy. Death is determinable. Injury is demonstrable. But sickness is, largely, what we think it to be, and sick-pay is, largely, what we can convince someone else to believe it to be. Little wonder that fraternals restrict themselves to small indemnities, and commercial companies failed dismally in the half century before 1898, and that even yet health insurance is written unprofitably. A 64% loss-ratio for all stock companies operating in the United States in 1922. A 61% loss-ratio in 1923. A 58% loss-ratio in 1924.

If casualty companies are finding it expensive to underwrite disability coverage, it may be that life companies will find it still more so. There are very logical reasons.

1. Important as the disability benefit is on a life policy, it remains secondary to the life insurance protection and is handled by life companies as a secondary consideration. There are many companies today who, with one or two underwriting rules to mark exception, grant disability coverage when they give life insurance at standard rates. In short, they underwrite disability as they underwrite life. More bluntly, they do not underwrite disability, they concede it.

2. Commercial health and accident has been, chiefly, cancellable insurance, which means that it gets yearly review. Selection is one year term and if that selection is none too happy, can we expect a more favorable experience on disability benefits, renewable as they are at the option of the policyholder?

3. Life companies have fewer defenses in resisting unfair claims. Adequate claim departments are not organized. Prorating is not possible if a policyholder accumulates indemnities

in excess of his income. The disability benefit partakes of the same incontestability as the life policy after the contestable period (usually one year) has expired.

But life companies have distinct advantages also; the medical examination, the elimination period before benefits are payable, and the lesser moral hazard that it evinces when a buyer pays a substantial life insurance premium as he gets his complementary disability benefits.

This moral hazard is inevitable with disability protection. Applicants differ with underwriters in interpreting past sickness and in anticipating future. Policyholders differ with claim men in what they believe to be compensable sickness. Disability insurance experience embraces the data evolved from these many conflicting ideas. It is on this uncertain foundation we rear statistical structures. Knowledge of the past we need as we predict the future, but in disability coverage, more than in other forms of personal insurance, we must know human nature.

Underwriting is a double analysis: The assaying of personalities; and the assaying of the more measurable elements of the risk as laid down to us by Dr. Oscar H. Rogers and Mr. Arthur Hunter.[59] [60] By personalities we mean—

1. The agent, the general character of his business, and his inclination to tell or conceal pertinent data;

2. The examiner, the reliability of his medical work, but more particularly his ability to extract a complete story;

3. The applicant himself, his temperament, his frankness as determined by the examiner and by the bureau records, his personal history and his insurance history more particularly with the casualty companies.

Assaying of personalities is important in selection of risks for life insurance. It is doubly important in selection for health coverage. Life insurance appeals to altruistic motives,

health protection to selfish motives. So as we underwrite health insurance, whether as disability benefits or as independent contracts, we must give double attention to the personalities with whom we deal. Sad it is the truth it is, we do not underwrite against disabilities, we underwrite against claims for disability.

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Dr. Whitney—Will Dr. P. M. Foshay of the Mutual Life kindly open the discussion?

Dr. Foshay—Mr. President and Friends: Dr. Dingman has rendered a real service. His paper is unusually scholarly. It portrays very considerable research into the literature of insurance as related to disability benefits. I am sure it will be referred to in our office and I think it is bound to be referred to in other offices for some time to come. It is rare, as I watch papers, that we get so much meat as there is in Dr. Dingman's paper. His supplementary remarks here are even more clarifying and undoubtedly carry a warning to all of us that are in this business.

I am sure I can say for our own company, that we are not yet frightened out, even though our experience has not been as pleasant as we wished. I suppose that it is most useful to a meeting like this to follow a custom which I think has been followed heretofore in the "discussion" of papers (especially of this kind which refer to a relatively new angle in our life insurance business), namely, to introduce what may be new facts. Fortunately for me, because I had so little in my mind to use in a discussion of a paper of this kind, we have just finished taking our own experience with disability benefits, and there are some things that may be of interest. As I said before, our experience cannot be called good, although

it certainly is not alarmingly bad. Along with others who are thinking on the subject, we believe this could be due to the fact that probably the rates are not quite adequate. Dr. Dingman has hit me pretty hard on that. It may be that higher rates may not cure the ailment, and yet I think it will in our own instance cure some of our illnesses.

We met with a surprise in our experience right from the start, but I suppose the rest of you must admit the same thing. I don't imagine that we have suffered differently or in greater degree than the rest, although we may. No experiences are published, so it is a little hard to know what the comparative results are, but we were not expecting to find such a rate of disablement from tuberculosis in the younger ages, under 40, worst from 15 to 30. We found that it affected males and females alike. If it had not been for that comparatively unfavorable experience with tuberculosis, our total experience with disability benefits would have been fairly satisfactory. Other causes of disablement were not out of reach of coverage by the table in use.

There is the thought in connection with that experience, I think, that the compensation is a little difficult to estimate. Those of us that have the disability benefit clause in our policies and that are suffering from this unexpectedly large disbursement for disablement from tuberculosis are perhaps contributing to a lessened death-rate from that disease. We are paying the cost of treatment and recovery (because there is a very good recovery-rate) and so we are to that extent improving our mortality. We knew that in many cases the disability benefit provision is practically the thing that enables the policyholder of the less wealthy grade to take the proper treatment. It does save us some money on our death claims. Of course it is the odd contradiction in disability benefits that (so far as it standing by itself is concerned) it shows better results if one of two things happen to the policyholder, either he gets well or he dies. If he stays alive and disabled, he is

only a liability on the benefits clause, but in combination with the life policy I must confess I am still "sold" with the idea. I believe that it furnishes to the policyholder a real service. I am sure we see cases in which it has helped materially, and I believe it comes nearer to being the ideal insurance which should cover if possible all the hazards of health as well as the certainty of death. Even if it cost us something (the total amounts paid out for disablement may not balance well with the amounts paid in so far as estimating the expected losses is concerned) nevertheless, the deficiencies may not appear excessive when compared with the saving in mortality.

Before I go on with something else, there is just an item that may interest you. We have had 1851 claims since we began putting the waiver of premium clause in our policy. Those claims represent experience under all sorts of clauses that is the waiver of premium clause, the yearly income clause (paid only once a year), the monthly income clause, and the clause providing that we agree that the insured is permanently disabled if the disablement exceeds 90 days. They are all together in that 1851. Of that 1851, 682 were from tuberculosis. That is 36.8 per cent of the claims. The second largest cause of disablement in men is insanity, which was 190 claims or roughly 10 per cent. Accidents came third, over 6%, a notable proportion due to industrial accidents. Most of the latter came from the insertion in our contract of the 90-day clause, because we find that a great many industrial accidents cause disablement lasting longer than 90 days. We had not anticipated so many. In my practice a long way in the past, I had never realized what a considerable proportion of fractures take longer than three months for complete union. It is astonishing. I don't think it is any reflection on the surgeons, but evidently bones don't unite as well as they used to. Our fourth largest cause in men was cancer, pretty nearly 6 per cent.

In women, while the first cause was tuberculosis, just as

in men, the second cause, as you might expect, was cancer, virtually 10 per cent. After that came heart disease which is way down on the list in men.

Our accidents, of which we had 116, carried out the old story about the stairs in the house being the most dangerous things in modern life (but these claims were not all due to stairs of course), as 55 per cent of our accident disablements were due to falls; and the next largest cause was automobiles, 16 per cent. The other causes were all scattered and our experience is not large enough to justify conclusions. No doubt more extended experience will change the present results.

We rate up medical impairments; and we rate up industrial occupations. Rates, of course, were based on the best information available. Perhaps there is an element of empiricism in them, as there has to be until experience has accumulated and we all join to contribute that experience to the scientific world. That will probably be some years away. However, the ratings have minimized the losses on many of these cases but I am telling no secret to say that we are raising those ratings as a result of that experience.

For the first few years and up to a year ago, I saw every one of these claims. I did that from the beginning because I wanted to know how this new project was going. Because I had the authority to investigate them myself (I mean to direct the investigation), I have a very definite opinion as to the moral hazard. I can say that so far as concerns the Mutual Life's experience, we have had very few fraudulent claims, and that means that we have used our own inspection service to the limit to get to the bottom where there was any suspicious circumstance. There has been a definite proportion of them, not large, but troublesome in the aspect of such claims arising in the first year or second year of insurance. There has been no question that we have had a few (as has been spoken of by Dr. Dingman) in which the insured un-

doubtedly took the insurance to get the disability benefit, knowing that he had some coming impairment. When those cases were in the contestable period, we have canceled the policies if we were able to secure proof that the man knew he had an impairment before he got his policy. I don't myself like cancellations. I dread them. I don't think any company should cancel policies if it can help it, because it is a reflection on our means of selection, our means of securing information. Our total number of cancellations last year was not large—it was under 50 in a business in which there were over 120,000 policies. I think half of those were due to misrepresentations, which we discovered when the disability claim was filed. That is all that we have had in the way of fraudulent claims. It is not very much. I myself think it is an excellent showing, and we are not living in an atmosphere of doubt on that because I know we have pursued these questionable cases thoroughly. We not only depended on local reports and examiner's reports, but in all those questionable cases we sent a trained investigator to get the facts and interview every one that knew anything about the case, so that I think our results on that are pretty definite, pretty accurate.

Dr. Dingman in his paper also spoke of one difficulty for the life companies that faced us, probably must have faced all of you that have like clauses, and that is the failure to have an organized claim department to handle these claims which are so different from death claims. In our own company, beginning with the first of this year, we did organize and put into effect a very good piece of machinery for that purpose and we followed the plan of keeping in touch with others who are engaged in similar work. I know that some of your companies are members of the Accident and Health Insurance Exchange. Perhaps it is well to say that we use that very freely when we have claims. We don't use it with applicants; it isn't feasible under present circumstances to do

it. The M. I. B. is all that you can use. If we tried to trace applicants through the Accident and Health Insurance Exchange, it would take too long; it would hold the business up. It is a very useful thing if you have a claim, however. It gives you a very definite hint as to the moral attitude of the claimant. If in the past he had a lot of claims against the casualty companies, your suspicions are aroused. If he hasn't a record and his past is clean, then you don't have to devote so much time to investigation.

I want to thank the Officers of this Association for inviting me here again. Years ago I was a member, but since I am no longer acting on business medically, I haven't been. Nevertheless, I have always carried a feeling in my mind that this is eminently an organization of good fellows and it is a matter of real enjoyment to get back and see you all. I thank you.

Dr. Whitney—Gentlemen, some of the members are getting restless and fading away and I will ask you to make your discussions as concise as possible. Will Dr. Lawrence Sykes kindly continue the discussion?

Dr. Sykes—Mr. President and Gentlemen: Dr. Dingman has furnished us with an excellent paper on the historical background and factors involved in Disability Insurance, with particular reference to the moral hazard. One of my Actuarial friends recently furnished a close-up picture of his experience with Medical Directors in their reaction to Disability Insurance. He stated: "The first tendency of Medical Directors was to ignore the disability feature and to only underwrite the life insurance end. This stage was followed by a panicky reaction with regard to disability."

Naturally, our attempt is to steer a course in midchannel. My limited experience in disability insurance underwriting has brought several factors frequently to mind. The first is that of Home Office organization in the handling of this big subject. In disability underwriting one factor which is of in-

estimable value is a closely allied accident and health department with well-trained and experienced accident and health underwriters. Their co-operation enables a life insurance company to handle this problem with the benefit of their experience.

The other detail of Home Office organization is an efficient claim department, with representatives in strategic centers to give prompt service in legitimate claims and to promptly investigate questionable claims.

The "Moral Hazard" in Disability Insurance has a broader meaning than merely—"Wine, Women and Song." We naturally have to watch the boozer and the trickster in business who would have to die to win life insurance, but is going to get everything he can if he has disability. The question of disability coverage for women, the age limitation to about age sixty to prevent the idea of an old age pension and the various medical impairments which preclude disability coverage all have their consideration and are of importance. However, is there not a sound underwriting principle, which, while mentioned, is not sufficiently stressed? Dr. Dingman has mentioned the work of the Committee of Five, B. D. Flynn, Chairman, which analyzed the experience of sixteen large companies, showing that the loss ratio is greater in the larger cases. Many companies limit disability coverage to $250 to $500 per month on the individual life. This rule is being easily and frequently sidestepped by dividing the amount applied for or desired between two, four, or more companies. We received an Inquiry Blank a few days ago in which the Agent informed us that his prospect carried $500 per month in three companies and $200 per month in one, making a total coverage of $1,700 per month. He was very anxious to secure $500 more coverage a month on this same individual. We have a definite rule that we will not consider disability in excess of $500 per month, total coverage.

As the essayist has so well said, in disability coverage more

than in any other form of personal insurance, "We must know human nature."

The President of a large Eastern concern carried a limited amount of disability insurance. He and the directors of his company came to a crossroads and the latter began to harass him. The next thing the President had a nervous breakdown and was sent to California by his physicians. While out there his directors dropped him and he was out of a job with no other training than in a specialty line. The insurance company paid a fairly long claim, but what would have been the story if he had been loaded with disability insurance? Would it not have been easy to make this breakdown continuous and difficult to disapprove?

What are we going to do to meet this situation? It seems to me that in this instance what affects one company will affect the other. Is not this question of the amount of disability coverage carried as important to us individually and collectively to code, as the number of times a Moral Hazard is drunk a year? Can we not protect each other with a red flag of caution, at least in cases where the maximum disability coverage is issued?

Dr. Whitney—Gentlemen, the subject is open for discussion. Dr. Dingman, have you anything further to add in closing?

Dr. Dingman—I wish merely to express my appreciation again.

Dr. Whitney introduced the incoming President, Dr. Angier B. Hobbs, who in a few words expressed his appreciation of the honor paid him in electing him as President. On motion the meeting adjourned *sine die*.

The Annual Dinner of the Association was held at the Manhattan Club on the evening of Thursday, October 22nd, 1925. The following members and guests were present:

LIST OF THOSE WHO ATTENDED THE ANNUAL DINNER OF THE ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS.

Abbe, F. R.
Adams, J. L.
Allen, E. H.
Amesse, J. W.
Armstrong, E. McP.

Bartlett, W. B.
Beckett, W. W.
Beckwith, E. W.
Bender (Mr.)
Bigelow, E. B.
Bradshaw, W. M.
Brown, C. T.

Carber, F. H.
Clark, C. P.
Chapin, F. W.
Christiernin, C. L.
Colt, H.
Cragin, D. B.

Daley, R. M.
Dewis, E. G.
Dingman, H. W.
Drake, P. G.
Draper, W. B.
Dunkley, J. H.
Dwight, E. W.

Eakins, O. M.
English, C. H.
Erdmann, J.
Fitzgerald, P.

Foshay, P. M.
Frost, H. M.

Gadd, S. W.
Gardiner, W. S.
Geiringer, A.
Gibbons, H. W.
Grau, L. C.
Griswold, A. H.
Grosvenor, F. L.

Hamilton, W. F.
Harnden, F.
Hasbrouck, L. B. (Mr.)
Hobbs, A. B.
Houck (Mr.)
Hunter, A. (Mr.)
Huston, R.
Hutton, L.

Jaquith, W. A.
Jenney, F. L. B.
Jimenis, A. O.
Johann, A. E.

Kanouse, G. E.
Kissock, R. J.
Knight, A. S.

Lounsberry, R. L.
Low, E. I. (Mr.)
Lowsley, O. S.

MacKenzie, L. F.
Martelle, H. A.
McSorley, F. W.
McSweeny, E. S.
Means, S. W.
Milroy, W. F.
Muhlberg, W.

Olsen, M. I.

Patton, J. A.
Piper, C. B.
Pollard, J. E.

Reiter, W. A.
Righter, F. P.
Rogers, O. H.
Root, E. K.
Rowley, R. L.
Rudasell, C. L.
Russell, E. F.

Scadding, H. C.
Scholz, S. B., Jr.
Smith, T. A.
Smith, V. R. (Mr.)
Snow, M.
Stanton, S. C.
Strong, W. M. (Mr.)
Sykes, L. C.
Thayer, B. (Mr.)
Thorndike, W.
Tiemann, P. E.
Toulmin, H.
Truitt, F. L.
Turner, J. P.
Tuttle, H. G.
VanDervoort, C. A.
Waits, C. E.
Ward, W. R.
Wear, J. W.
Wehner, W. E. H.
Weisse, F. S.
Wells, F. L.
Whicher, C. M.
Whitney, C. F. S.
Willard, T. H.
Wishard, E. E.
Young, H. H.

LIST OF MEMBERS OF THE ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS.

Frederick R. Abbe, M. D.	Columbian National, Boston, Mass.
John L. Adams, M. D.	Metropolitan, New York, N. Y.
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Charles D. Alton, M. D.	Connecticut Mutual, Hartford, Conn.
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Albert E. Awde, M. D.	Union Mutual, Portland, Me.
Walter C. Bailey, M. D.	New England Mutual Boston, Mass.
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G. Holbrook Barber, M. D.	Manhattan, New York, N. Y.

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Roland A. Behrman, M. D.	John Hancock, Boston, Mass.
Thomas W. Bickerton, M. D.	New York Life, New York, N. Y.
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William H. Browne, M. D.	American Life, Detroit, Mich.
Thomas W. Burrows, M. D.	Central Life, Chicago, Ill.

Joseph T. Cabaniss, M. D.	Travelers, Hartford, Conn.
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Frank W. Chapin, M. D.	Home Life, New York, N. Y.
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John P. Chapman, M. D.	Penn Mutual, Philadelphia, Pa.
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Charles P. Clark, M. D.	Mutual Benefit, Newark, N. J.
Henry Colt, M. D.	Berkshire, Pittsfield, Mass.
Edwin A. Colton, M. D.	National, Montpelier, Vt.
Henry W. Cook, M. D.	Northwestern National, Minneapolis, Minn.
John N. Coolidge, M. D.	Metropolitan, New York, N. Y.
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Robert M. Daley, M. D.	Equitable, New York, N. Y.
Joe E. Daniel, M. D.	Great Southern Life, Houston, Texas.
Ernest J. Dewees, M. D.	Provident Mutual, Philadelphia, Pa.
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Henry K. Dillard, M. D.	Penn Mutual, Philadelphia, Pa.
Harold W. Dingman, M. D.	The Continental Assurance, Chicago, Ill.

William W. Dinsmore, M. D.	Travelers, Hartford, Conn.
Percy G. Drake, M. D.	Travelers, Hartford, Conn.
Edwin W. Dwight, M. D.	New England Mutual, Boston, Mass.
O. M. Eakins, M. D.	Reliance, Pittsburgh, Pa.
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Dudley Fulton, M. D.	Occidental Life, Los Angeles, Calif.
Samuel W. Gadd, M. D.	Philadelphia Life, Philadelphia, Pa.
Homer Gage, M. D.	State Mutual, Worcester, Mass.
Frank Irving Ganot, M. D.	Prudential, Newark, N. J.
William S. Gardner, M. D.	Mutual, New York, N. Y.
Donald M. Gedge, M. D.	Metropolitan, New York, N. Y.
Arthur Geiringer, M. D.	Equitable, New York, N. Y.
Henry W. Gibbons, M. D.	Western States, San Francisco, Calif.
Alvah H. Gordon, M. D.	London & Scottish, Montreal, Que.
John K. Gordon, M. D.	Sun Life, Montreal, Can.

Angus Graham, M. D.	London Life, London, Ont.
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Frederick W. Hagney, M. D.	Mutual Benefit, Newark, N. J.
William F. Hamilton, M. D.	Sun Life, Montreal, Que.
William J. Hammer, M. D.	New York Life, New York, N. Y.
R. M. Hargrove, M. D.	Great Southern Life, Houston, Texas.
George A. Harlow, M. D.	Northwestern Mutual, Milwaukee, Wis.
Frank Harnden, M. D.	Midland Mutual, Columbus, Ohio.
Whitfield Harral, M. D.	Southwestern Life, Dallas, Tex.
Calvin L. Harrison, M. D.	New York Life, New York, N. Y.
Ernest M. Henderson, M. D.	Confederation Life, Toronto, Ont.
Charles R. Henry, M. D.	State Life, Indianapolis, Ind.
Daniel W. Hoare, M. D.	Penn Mutual, Philadelphia, Pa.
John U. Hobach, M. D.	Penn Mutual, Philadelphia, Pa.

Angier B. Hobbs, M. D.	New York Life, New York, N. Y.
Wm. W. Hobson, M. D.	Reliance Life, Pittsburgh, Pa.
Eugene M. Holden, M. D.	Metropolitan, New York, N. Y.
Byam Hollings, M. D.	John Hancock, Boston, Mass.
Jerome F. Honsberger, M. D.	Mutual Life of Canada, Waterloo, Ont.
Ross Huston, M. D.	Bankers, Des Moines, Iowa.
James P. Hutchinson, M. D.	Penn Mutual, Philadelphia, Pa.
William G. Hutchinson, M. D.	Michigan Mutual, Detroit, Mich.
Henry S. Hutchison, M. D.	Canada Life, Toronto, Ont.
Lefferts Hutton, M. D.	Mutual, New York, N. Y.
Phineas H. Ingalls, M. D.	Aetna, Hartford, Conn.
Charles B. Irwin, M. D.	North American, Chicago, Ill.
Walter A. Jaquith, M. D.	National, Chicago, Ill.
Benjamin Y. Jaudon, M. D.	Missouri State Life, St. Louis, Mo.
Frank L. B. Jenney, M. D.	Federal Life, Chicago, Ill.
Albert O. Jimenis, M. D.	Metropolitan, New York, N. Y.
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William P. Lamb, M. D.	Prudential, Newark, N. J.
John L. Larway, M. D.	State Life of Indiana, Indianapolis, Ind.
Ernest H. Lines, M. D.	New York Life, New York, N. Y.
John Mason Little, M. D.	New England Mutual, Boston, Mass.
John M. Livingston, M. D.	Mutual Life of Canada, Waterloo, Ont.
Robert L. Lounsberry, M. D.	Security Mutual, Binghamton, N. Y.
Lewis F. MacKenzie, M. D.	Prudential, Newark, N. J.
Charles N. McCloud, M. D.	Minnesota Mutual, St. Paul, Minn.
Francis H. McCrudden, M. D.	New England Mutual, Boston, Mass.
Charleton B. McCulloch, M. D.	State Life, Indianapolis, Ind.
Thomas F. McMahon, M. D.	Manufacturers, Toronto, Ont.
Frederick W. McSorley, M. D.	Equitable, New York, N. Y.
Charles Maertz, M. D.	Union Central, Cincinnati, Ohio.
Robert W. Mann, M. D.	Imperial, Toronto, Ont.
William S. Manners, M. D.	Metropolitan, New York, N. Y.
Henry A. Martelle, M. D.	Conn. Mutual, Hartford, Conn.

Charles F. Martin, M. D.	Standard Life, Montreal, Que.
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McLeod C. Wilson, M. D.	Travelers, Hartford, Conn.
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National Life, Montpelier, Vt.	A. B. Bisbee, M. D. E. A. Colton, M. D.
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North American Life, Chicago, Ill.	C. B. Irwin, M. D.
Northwestern Mutual, Milwaukee, Wisc.	J. W. Fisher, M. D. G. A. Harlow, M. D. William Thorndike, M. D. D. E. W. Wenstrand, M. D.
Northwestern Natl., Minneapolis, Minn.	H. W. Cook, M. D.
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Ohio State, Columbus, Ohio	C. E. Schilling, M. D.

Pacific Mutual Life, Los Angeles, Calif.	Wesley W. Beckett, M. D.
Pan-American Life, New Orleans, La.	Marion Souchon, M. D.
Penn Mutual Life, Philadelphia, Pa.	J. P. Chapman, M. D. H. K. Dillard, M. D. D. W. Hoare, M. D. J. U. Hobach, M. D. J. P. Hutchinson, M. D. Harry Toulmin, M. D.
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Philadelphia Life, Philadelphia, Pa.	S. W. Gadd, M. D.
Phoenix Mutual Life, Hartford, Conn.	A. H. Griswold, M. D. W. D. Morgan, M. D. R. L. Rowley, M. D.
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Reliance Life, Pittsburgh, Pa.	O. M. Eakins, M. D. W. W. Hobson, M. D. A. A. Wagner, M. D.
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Southern States Life, Atlanta, Ga.	C. E. Waits, M. D.
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Southwestern Life, Dallas, Texas	Whitfield Harral, M. D.
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William B. Davis, M. D.	Cincinnati, Ohio.
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Frank Donaldson, M. D.	Baltimore, Md.
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John Homans, 2nd, M. D.	Boston, Mass.
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Albert Wood, M. D.	Worcester, Mass.
Green V. Woollen, M. D.	Indianapolis, Ind.
Joseph C. Young, M. D.	Newark, N. J.

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